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THE HEALING ART;

OR,

Chapters upon Medicine, Diseases, Remedies, and
Physicians,

Historical, Biographical and Descriptive.

IN TWO VOLUMES.

VOL. I.



“ La première chose qui s’offre à l’Homme quand il se regarde, c’est son corps.”

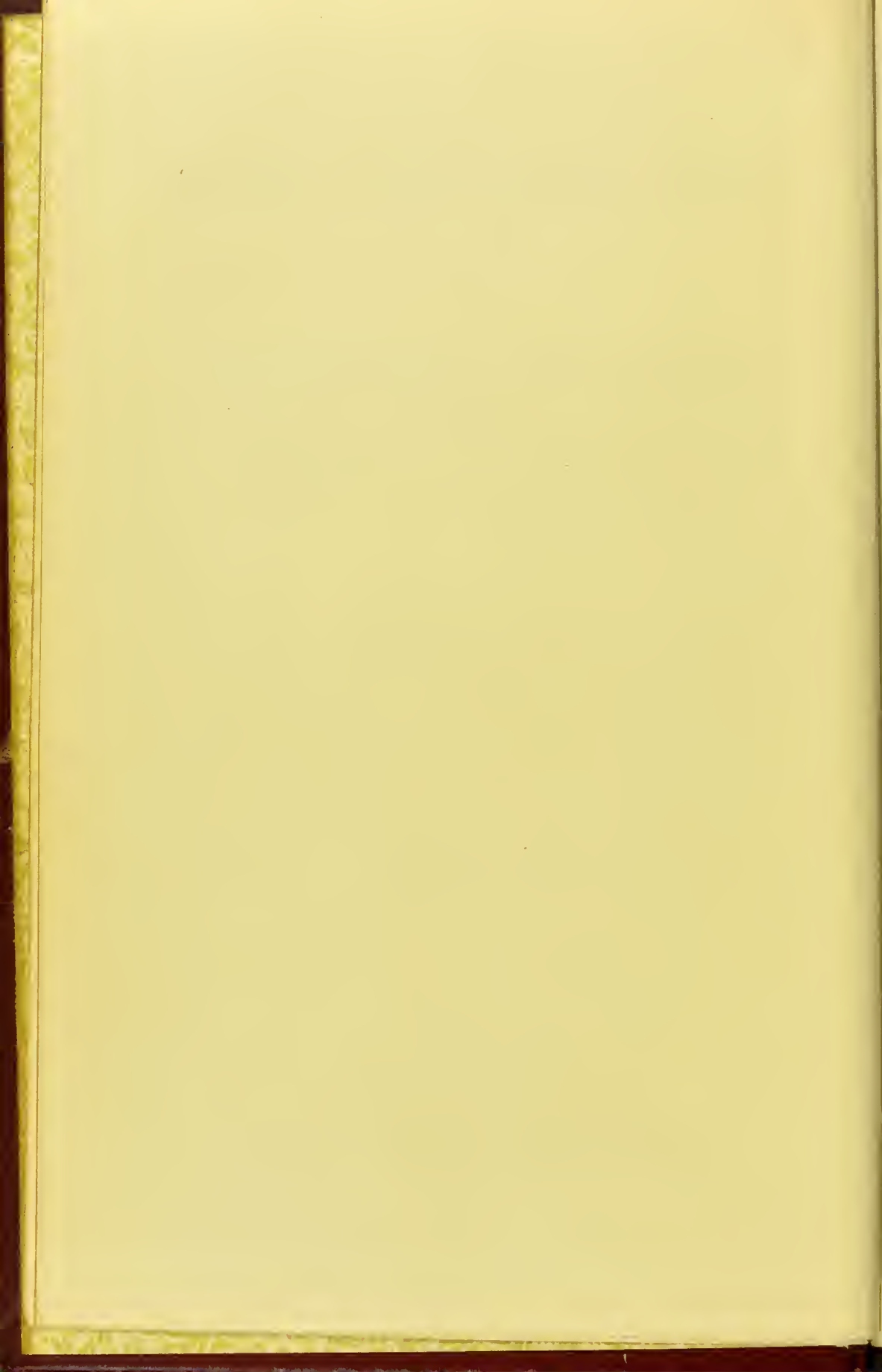
Pascal.

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1887.



PREFACE.

“THE Lord hath created medicines out of the earth,” says the author of *Ecclesiasticus*; “and he that is wise will not abhor them. Then give place to the physician, for the Lord hath created him: let him not go from thee, for thou hast need of him. There is a time when in their hands there is good success.” It is in the spirit indicated by these words that the present volumes have been written; not with the panegyrics of a credulous believer in the unlimited efficacy of medicine and the unerring wisdom of medical practitioners; not with the depreciatory criticism of the sceptic who denounces the worthlessness of drugs, the mysteries of science, and the ignorant audacity of its professors; but with the fairness, I trust, of the moderate-minded observer, who, while not denying the empiricism that belongs to medicine, and the changes of opinion, the assumptions, and the errors to which medical men, like other men, are subject, is sensible, nevertheless, of the immense indebtedness of humanity to their care, and skill, and ever-widening knowledge, and to the assistance lent by Medical Science in our daily warfare against Disease and Death.

My object in these volumes has been twofold: (1) to present, in a popular and condensed form, a general view of the progress of Medicine from the days of its infancy as a Healing Art; and (2) to combine with this historical relation brief biographical sketches of the eminent men who have contributed to that progress by their genius and devotion.

In endeavouring to carry out my purpose I have hoped that I might render my book of interest to the profession as well as to the public, and have included, therefore, as many details as my space would permit of the gradual recognition of diseases and their remedies, and the successive advances made in a knowledge of the human organization. A survey which begins with Hippocrates and Serapion, and comes down to Gull and Jenner and Spencer Wells, necessarily covers a very extensive field—includes a large number of facts and names—and embraces a variety of difficult and even obscure questions. It is possible, therefore, that an occasional error may be detected, but I can honestly say that I have done my best to avoid misstatements, and to secure that exact accuracy which in a book of this kind the reader will naturally look for. For his satisfaction, and to assist him if he care to pursue the subject further, I have referred in the following pages with considerable frequency to the authorities on whom I have principally depended, and especially so in those later chapters which treat of the English Physicians and Surgeons. But I may here enumerate a few of the books which will prove useful to him at the outset:—Leclerc, *Histoire de la Médecine*; Sprengel, *Histoire de la Médecine* (translated by Jourdain); *Physici et Medici Græci Minores*; Celsus, *De Re Medicâ* (by Steggall); Meryon, *History of Medicine*; Hecker, *Epidemics of the Middle Ages*; Dr. Bostock, *Cyclopædia of Practical Medicine*; Marquis de Paulmy, *Livres de Médecine, Chirurgie, etc.*; Littré, *Médecine et Médecins*; *Medicine in Modern Times*, 1869; Dr. Russell, *History and Heroes of the Art of Medicine*; Dr. Macmichael, *The Gold-headed Cane*; Dr. Munk, *Roll of the College of Physicians*; *Lives of British Physicians* (published by Murray); Dr. Pettigrew, *Biographical Memoirs of Celebrated Physicians, Surgeons, etc.*; Dr. Williams, *Principles of Medicine*; Sir Thomas Watson, *Lectures on Principles and Practice of*

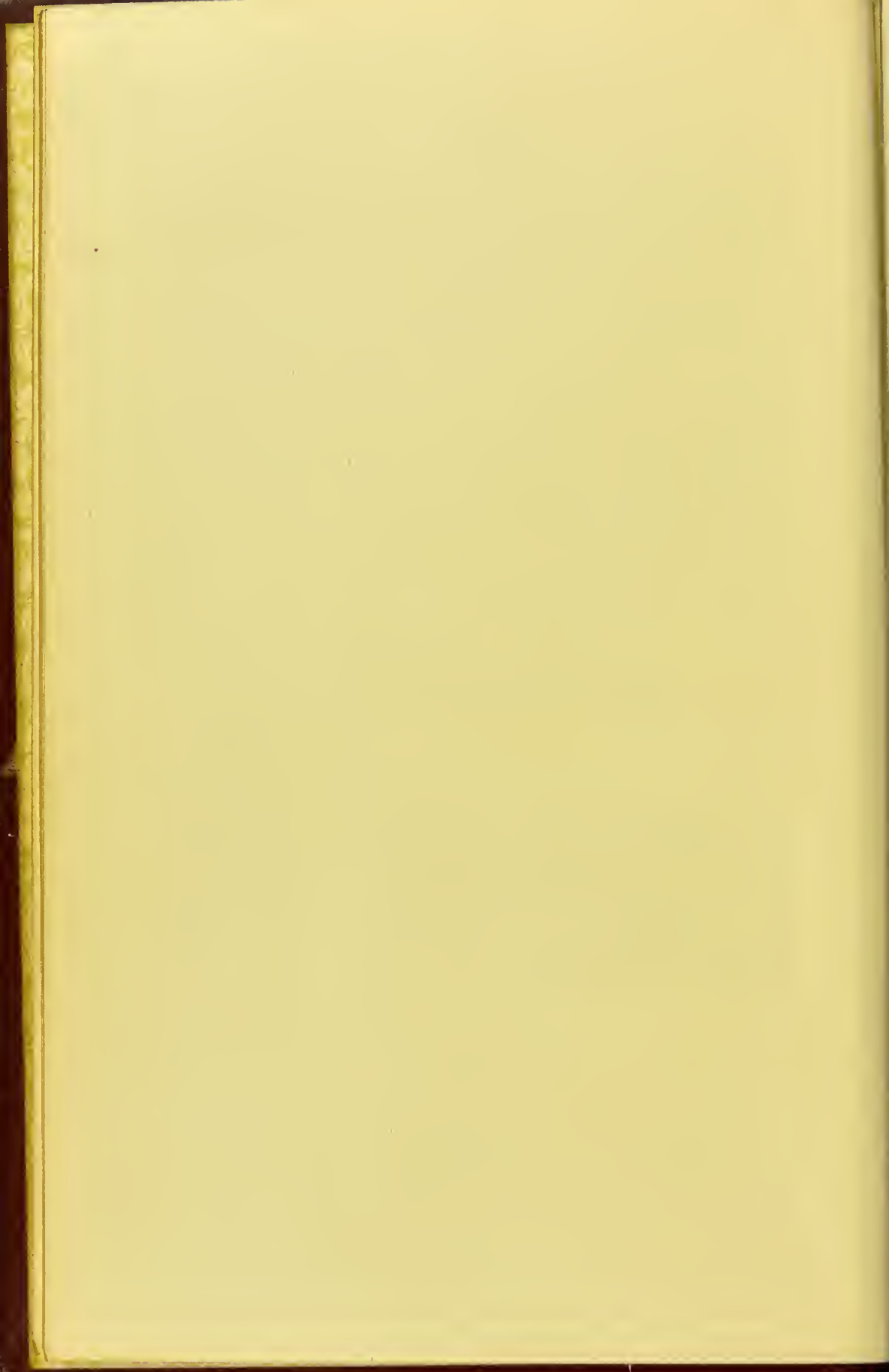
Physic; Thomson, *History of Chemistry*; Dr. Carpenter, *Principles of Physiology*; Sir Benjamin Brodie, *Psychological Inquiries*; G. Bettany, *Eminent Doctors*; etc.

The plan adopted has precluded me from dwelling, except incidentally, on what may be called the *romantic* side of Medicine—on the remarkable facts connected with obscure symptoms of disease, on curiosities of diagnosis, on mental phenomena, on curiosities of medical experience, on startling incidents in the detection of crime, and surprises in the way of cures. Yet the historical and biographical aspects which these two volumes consider are not without a strong and enduring interest; at least, they cannot fail to confirm the reader in a grateful sense of all that the world owes to the Healing Art and its professors; to

. "The holy art whose lifted shield
Wards off the darts a never-slumbering foe,
By hearth and wayside lurking, waits to throw."

THE AUTHOR.

[It is desirable to state that the present work was planned and approved by the publishers two years ago. A regrettable mischance has removed the sketch of "Sir Henry Holland" to the Chapter (Vol. II.) on "English Surgeons," from its proper place at the close of the chapter on "English Physicians in the Nineteenth Century."]



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THE HEALING ART.

CHAPTER I.

EARLY HISTORY OF MEDICINE.

IF the human body, and the bodies of animals generally, could always exist in their natural condition, without undergoing any change, so that the various parts of which they are composed might continue to discharge their several functions efficiently, they would realize the poet's dream of immortal life and youth and health. But this wonderful piece of work, the frame of man, like everything else in Nature, must eventually be dissolved, as universal experience teaches us. There is never a moment when some alteration, perceptible or imperceptible, is not taking place. Its motor-springs are composed of a substance so tender, and so sensitive to external impressions, that they rapidly wear out; and, moreover, being infinitely subtle and complex, they are necessarily very fragile. Hence it follows that this marvellous machine must often be thrown out of gear, that it cannot possibly endure for any considerable period of time, and that consequently it is impossible to avoid death, which involves its total dissolution, or disease, which hastens it.

That men and animals die is, then, a thing not to be wondered at; the wonder is that they live so long, and that death and disease do not attack them sooner and more frequently.

Which would, indeed, be the case if, among the innumerable springs which impel the machine and are indispensable to its maintenance, no distinction were made between the more and the less complicated, the more and the less necessary. Some are like to the master-wheel or the mainspring of a watch, which drives and directs the rest of the mechanism, and cannot be injured, therefore, without arresting its action fatally; but others are less essential, and may suffer considerable damage, or even be displaced, without wrecking the machine as a whole.

We know that the errors we commit in the way of diet, exercise, rest, and pleasure, as well as all the accidents and ills to which we are daily exposed, do not accomplish the complete destruction of the body, and often do not subject it to any sensible derangement or disorder. But supposing the contrary to happen, this machine is so admirably constructed, that it can frequently, by its independent action, throw off the impediment which embarrasses its movements, and recover its abnormal and healthy condition; or, if it have need of foreign aid, and the means which suffice for it in its ordinary state should lose their efficacy, and among the external agents which it is not accustomed to employ, some are found to possess a noxious character, still, there are others from which it may derive assistance in its hour of need. We see that the beasts, with no other help than they gain from the senses, or, as we say, by a natural instinct, are able to abstain from, or safeguard themselves against, whatever might prove hurtful to their health, and to seek out and adopt whatever is likely to be beneficial. This is not the place to examine whether all that is said of the instinct of animals lies within the bounds of truth; it is sufficient here to remark that men, who enjoy the supreme gift of reason, have not failed to turn it to advantage in similarly seeking and adopting everything which can conduce to their physical welfare.

The natural desire which we experience for self-preservation has led mankind, from the earliest ages, to distinguish carefully between those things which minister to health and the prolongation of life, and those which may impair the former and cut short the latter. They have specially directed their efforts to *preventive* measures ; but perceiving that, notwithstanding all their care, they are sometimes taken by surprise, and are not always able to avoid the causes of injury or disease, they have, as a last resource, devoted their energies to the discovery of remedies and of methods of cure, to be applied when precautions have failed.

Seeing then that those who died had apparently committed some error which gave to their ailments a fatal character, and that, on the other hand, those who survived had made use of certain things not necessary or desirable in health, to which their recovery was attributable, we, in our turn, have been led to avoid the mistakes that proved so injurious to the former, and have adopted for ourselves or others, under similar conditions, the remedies that proved so beneficial to the latter. This we have continued to do with more or less of success, according to constantly varying circumstances. And the result and practice of such observations—the result of long and prudent experience—is what we designate by the name of Medicine, or the Art of Healing.*

Of this Art we propose in the following pages to furnish a brief historical sketch, supplemented by biographical notices of some of its most eminent professors, and notes upon certain collateral and cognate subjects. It is an Art so intimately associated with human happiness, with elasticity of mind and vigour of body, with the welfare of the individual and the prosperousness of the community, that we are not surprised at the claim of a Divine origin which was made for it by the nations of antiquity. “*Deorum immortalium,*” says Cicero,

* LECLERC, *Histoire de la Médecine*, 1^{re} partie, liv. 1, c. 1.

“*inventioni consecrata est Ars Medica.*” And Hippocrates tells us that those who first discovered the methods of curing disease were of opinion that it was an art which deserved to be regarded as the invention of God ; which, he adds, is the common sentiment. Without disputing its Divine paternity, we must confine ourselves here to its distinctively human original. Sprengel goes back to the clouds and shadows of the Egyptian civilization, and afterwards wanders among the myths and fables of classic antiquity ; but we are content to dismiss Orus and Hermes, along with Æsculapius and the Asclepiades, Podalirius* and Machaon, Pythagoras and Anaxagoras, Metrodorus—the first public lecturer on the art (B.C. 440)—and the itinerant physicians, or quacks, called *Periodontæ* ; we are not concerned to inquire into the extent to which the Greeks were indebted to the Persians for their medical knowledge† ; we start at once from HIPPOCRATES, because in so doing we find firm and substantial footing, and are assisted by the record of indisputable facts.

Hippocrates, son of Heraclides, was born at Cos, B.C. 460, and belonged to a family which for three centuries had followed the pursuit of medicine, and had even produced some celebrated physicians. Among his contemporaries were Socrates, Plato, and Xenophon ; the statesman Pericles ; Herodotus and Thucydides ; Pindar, Æschylus, Euripides, Sophocles, and Aristophanes ; so that he flourished in the ripest period of the intellectual development of Greece, and was himself one of the brightest ornaments of that brilliant period. He was a close and careful observer ; he collected his data with scrupulous fidelity, and was generally discreet in the deductions he drew from them. To him we owe the first recognition of the principle which he called Nature [*φύσις*], to which he attributed an enormous power, placing it above

* Podalirius seems to have been the first to practice venesection.

† See WATSON, *The Medical Profession in Ancient Times* (ed. 1856).

everything else. Nature, he said, is all-sufficient. She knows of herself all that is necessary for us, without requiring us to teach her, and without being taught. And therefore, as if Nature had been a principle endowed with consciousness, he gave her the title of "the just." He attributed to her a faculty [δύναμις], or faculties, which were, so to speak, her servants; and it was by their means, he said, that the organization of the animal frame was regulated. It was through them that the blood, the spirit, and heat circulated in all its members, which thereby received life and feeling. He described the governing faculty, or δύναμις, as that which nourishes, preserves, and increases all things.

As his knowledge of the human anatomy was limited and imperfect, he necessarily fell into errors. He supposed the arteries to be filled with air, and was ignorant that any communication existed between the larger vessels and the heart. His idea of the blood circulation was vague; he did not understand the value of the indications afforded by the pulse. He confounded the nerves with all the other white tissues of the body, such as tendons and ligaments, and was ignorant of the molecular changes which are propagated along the course of the true nerves, whereby we keep in touch with the outer world. The brain was to him a glandular mass, useful for secreting pituita or mucus; and he did not know that it was the seat of the nerve-force, *vis nervosa* or *vis vitalis*, which controls all our actions and sensations. With the external manifestations of disease, however, his acquaintance was wide and exact, and he was the first to lay down the doctrine of "critical days." Nor were his therapeutical resources so limited as might be supposed. The *Asclepia*—hospitals, temples, or medical schools (they were really of this triple character)—were usually built in good sanitary positions, and the regimen adopted in them would have commended itself to the most enthusiastic hydropathist. As for drugs, he employed

henbane, hemlock, poppy-juice, and mandragora, as sedatives ; hyssop and hellebore, as emetics ; and elaterium, scammony, spurge, and mercurialis perennis, as purgatives.

The leading principles which governed his therapeutic treatment he enunciates as follows :—

First. That contraries or opposites are remedies for their opposites. That is, if certain things are opposed to one another, we must employ them one against another. Thus, evacuation cures the ills that arise from repletion, and repletion those that originate in (excessive) evacuation. Heat destroys cold, cold heat, and so on.

Second. Medicine is an addition of that which is deficient, and a subtraction or retrenchment of that which is superfluous.

Hippocrates explains, *thirdly*, that there are juices or humours which, in certain circumstances, must be voided or expelled from the body, and others which must be introduced into it, or made to create themselves. Care must be exercised so as not to empty or to refill all at once, or too rapidly, or too abundantly. It is very dangerous to re-heat or refrigerate too suddenly, or too plentifully—excess being always the enemy of Nature.

Fourthly. We must sometimes expand and sometimes contract, dilate or open, the passages (*αἱ ἔφοδοι*) through which the humours are naturally evacuated, when they are not sufficiently open, or in some way have become closed ; and, on the contrary, retract or compress the relaxed passages, when humours pass through them which ought not to pass, or pass too freely. He adds that there are occasions when a softening treatment is necessary ; others, when it must be a hardening one ; and others when it should be lenitive. Again, at times we must thin and refine ; at times, we must congeal or thicken ; or we must stimulate and arouse ; or, finally, we must deaden sensibility,—always with a due regard to the humours or solids of the body.

His *fifth* proposition is, That we must observe the course taken by the humours, whence they come, whither they go, and consequently, when they flow in a wrong direction, we must divert or conduct them in another, much as we turn aside the waters of a stream. And, under other circumstances, we must seek to call back these same humours, attracting towards the upper parts those which hurry towards the lower, and towards the lower those which make towards the upper.

Sixthly. That we must expel through suitable channels everything which ought rightly to be voided, and be careful that humours which have once issued from the vessels do not return into them.

Seventhly. When we act according to reason, though the result is not always success, we ought not lightly or too quickly to change our method of treatment, so long as the causes exist which originally induced us to adopt it.

But as this maxim might sometimes mislead, he adds an *eighth*, by way of correction or limitation. We must pay great attention, he says, to that which soothes—to that which is noxious—to that which we easily endure—and to that which we find intolerable (ἡ ὠφέλεια, ἡ βλάβος, τὸ εὐφρον, τὸ δίτφορον).

The *ninth* proposition is one of the most important:—Nothing must be done rashly. You must rest at times, and refrain from all interference. So that if you do no good to the sick man, you will at least do him no harm.

For extreme maladies, says Hippocrates, we must use extreme remedies. When drugs do not cure, the lancet will; when the lancet fails, cautery must be tried; but when cautery is unsuccessful, the disease is incurable.

It will be seen that all these propositions are based upon that which is the foundation of the old Greek physician's

system of therapeutics: Nature herself cures her own maladies; or, Nature is the best physician.

Respecting the personal history of Hippocrates we know very little. He was instructed in medical science by his father, travelled in different parts of the mainland of Greece, and died at Larissa, in Thessaly, about 357 B.C. His two sons, Thessalus and Draco, and his son-in-law, Polybus, were also physicians of repute, and were probably the authors of some of the treatises which bear his name.

These are authentic facts. Stories of later origin may be dismissed as pure inventions: namely, that he discovered, by the quickening of his pulse, that the ailment of Perdiccas II., King of Macedonia, was occasioned by his love for his father's concubine, Stratinice; that he arrested the great plague at Athens by burning fires throughout the city, in order to purify the air; that he refused to give his medical advice to the Persian king, Artaxerxes Longimanus, because he was the enemy of Greece; and that he burnt the library at Cos, in order to conceal the extent to which he had made use of its books on medicine.

Of the large collection of works which go under the name of Hippocrates, two, the "*Prorrhetica* I." and the "*Coacæ Prænotiones*," are anterior to his time; many, nearly one-half, in fact, belong to a later period; and the following (for convenience we adopt Latin titles) may be accepted as written by himself:—"Prænotiones" (or "Prognostics"); "Aphorismi;" "*Epidemiorum* I., III.;" "*De Diætâ Acutorum*;" "*De Aëre, Aquis, et Locis*;" "*De Capitis Vulncribus*;" "*De Prisca Medicina*;" "*De Articulis*;" "*De Fracturis*;" "*Mochlicus*;" "*Jusjurandum*;" "*Lex*;" "*De Ulceribus*;" "*De Fistulis*;" "*De Hæmorrhoidibus*;" "*De Officinâ Medici*;" and "*De Morbo Sacro*." Some authorities give the last eleven treatises to his immediate disciples.

"The Father of Medicine" was the first writer who treated

of the effect of climate as a therapeutic agent. He considered that while heat and cold, moisture and dryness, succeeded one another throughout the year, the human body underwent certain analogous changes, which modified the diseases of the period, and on this groundwork founded the doctrine of pathological constitutions [corresponding to particular atmospheric conditions; so that, whenever the year or the season exhibited a special character in which such or such a temperature prevailed, those who underwent its influence were affected by a series of disorders all of the same kind. Hence follows the belief that different climates exercise an influence on the human frame—a branch of medical science to which due attention has only of late been paid.

With respect to his system of "humoral pathology," it will be enough to state that he placed the primary seat of disease in the four fluids or humours of the body—blood, phlegm, yellow bile, and black bile; that he regarded health as the result of the proper combination, or *crasis*, of these; that when this *crasis* was disturbed, disease ensued; that when a disorder proceeded favourably, these humours underwent a certain change in quality (or *coction*), which was the sign of returning health, as preparing the way for the expulsion of the morbid matter (or *crisis*); and that these *crises* had a tendency to occur at certain stated periods, which (as we have already indicated) he called "critical days."

That Hippocrates was a deep thinker we know from his terse and weighty apophthegms, of which one, by the way, has passed into the ordinary speech of nations,—"*Vita brevis, ars longa*," or, as he more definitely wrote—"Life is short; the art long."

The best edition of his writings is Littré's (Paris: 1839-40), and an excellent one bears the name of Ermerius (1859). See also Vols. 21, 22, and 23 of Kuhn's "*Medicorum Græcorum Opera*," and the English translation by Dr. F. Adams, pre-

pared for the Sydenham Society in 1849 ; together with the *Historics of Medicine* by Sprengel, Leclerc, Meryon, Watson, and others.

Herodieus, a contemporary of Hippocrates, was the first to adopt the exercises of the gymnasium in the treatment and cure of diseases. About the middle of the third century before Christ, appeared Philenus, the pupil of one Herophilus, who founded the so-called *Empirici*, and taught that in the treatment of disease we must depend upon experience alone. He dismissed anatomy and physiology as useless studies, and rejected the Rationalists as prodigal in words, but ignorant of the *Healing Art*.

Serapion, at one time a follower of Hippocrates, went over to the camp of the *Empiricists*, and wrote with violence against his former master. He seems to have practised at Alexandria, his native city. We do not know, with any degree of exactness, when he flourished, but it must have been in or near the time of Philenus, because he came after Hippocrates and preceded Heraclides. He wrote a book upon "*Medicaments which could be Made Easily*," and we find some indications of his method in *Coelius Aurelianus*, which show that he adopted the remedies, while rejecting the reasonings, of Hippocrates and his school. "He was sensible of the inadequateness of personal experience, together with the recorded observations of others in the treatment of disease, and contributed a third power, which is admitted in our most approved systems of logic at the present day : I allude to analogical reasoning ; but as reasoning is at variance with empirical practice, he employed the term *analogism*, and based empiricism on the tripartite foundation of history, experience, and analogism. Thus the very fountain-head of medical science is tainted with the germs of empiricism ; for, at this early period, the two great sects of *Dogmatists* and *Empirics* divided its domain in

the rival schools of Cos and Cnidos. 'The empiric started with an argument which in the abstract is true, though in fact it was fallacious; while the rationalist took a higher but equally fallacious stand for the exercise of the intellect.'

When, on the dismemberment of Alexander the Great's empire, Egypt passed under the rule of Ptolemy, Alexandria became the great intellectual centre of the age, and the medical schools of Cos and Cnidos faded into obscurity before the lustre of the new Alexandrian school. Profiting by the labours of Aristotle in Natural History and Comparative Anatomy, its teachers undertook, for the first time, to describe the organization of the human frame from actual dissections.

Herophilus was one of the most brilliant masters of this school. He was born at Chalcedon, in the fourth century; became a pupil of Praxagoras; and finally settled at Alexandria. Little is known of the events of his life. He wrote several medical and anatomical works, of which only a few fragments have been preserved by Galen and other writers. He was the author of commentaries on the writings of Hippocrates, and explained those terms used by the great physician which had become obsolete or obscure. His anatomical discoveries, however, are his claim on the grateful remembrance of posterity. It is affirmed that in the fever of his pursuit he even dissected criminals alive—a statement which no advocate of vivisection will consider improbable. The nervous system he traced with skilful hand, distinguishing, it is thought, between nerves of sensation and nerves of voluntary motion; though his ideas were not entirely clear, as he includes the tendons and ligaments under the common term *νεῦρον*, and calls some at least of the nerves by the name of *πορος*, *meatus*. He recognized the difference between the cerebrum and the cerebellum; the soul he enthroned in the ventricles of the brain. Some of the anatomical terms which he invented and applied

are still in use ; such as the “duodenum,” the “calamus scriptorius,” and the “Toreular Herophili.” He detected the existence, but not the use, of the lacteal vessels ; he attributed to the heart the force and character of the arterial pulsations, and to an affection of the nerves the paralysis of muscles.

Herophilus founded a celebrated medical school at Men-Carus, near Laodicea, in Phrygia, which continued to flourish for long after his death. The extant fragments of his writings, and the notices of his life and opinions scattered through ancient authors, have been collected and edited by Dr. C. F. H. Marx, in his essay, “De Herophili celeberrimi medici Vitâ, Scriptis, atque in medicinâ Meritis” (Gottingen, 1840). See also Sprengel and Watson. A good story is told of his ready humour. A certain Alexandrian Sophist was fond of denying the existence of Motion : “If matter moves,” he said, “it is either in the place where it is, or in the place where it is not ; therefore it cannot move at all.” It happened that he dislocated his shoulder, and sent for Herophilus to replace it, who argued, however, in the sophist’s own fashion, that it was impossible for any dislocation to have occurred, until the unfortunate man implored him to give up his quibbling and proceed to his surgical treatment.

Colleagues of Herophilus in the Medical School were Cleombrotus of Cos and Erasistratus. The former received the highest medical fee, I think, upon record ; for having cured King Antiochus of a dangerous disorder, he was rewarded with the royal remuneration of a hundred talents, or about £15,000. Erasistratus was the most eminent pupil of Chrysippus, and ranks with Herophilus as one of the true founders of the science of anatomy. He discovered the use of the trachea in conveying air to the lungs, and gave it its name. Perceiving the need that air should pass into the lungs for respiratory purposes, and observing in dead bodies the empty condition of the arteries, he put the two facts together, and concluded

that the air which entered the lungs by the trachea was conveyed by the pulmonary veins to the left cavities of the heart, and thence, by the aorta and its ramifications, to any part of the body. So that the arteries were supposed to be, like the trachea, simply air-passages, and hence their names.

Erasistratus, it is said, reached an advanced age, and finally poisoned himself by a dose of hemlock.

Professors of medicine became so numerous in Alexandria, that they were led to adopt separate branches of practice—such as surgery, pharmacy, and dietetics, to the great advancement of medical knowledge. There were also practitioners who made a specialty of diseases of the eye, others of the head, of bowel-complaints, and secret diseases. Most of the surgical operations now in vogue were performed by the Alexandrian surgeons—by Philoxenus, Georgius, Sostratus, the two Herons, the two Apollonii, Philotimus, Nileus, and Heraclides; and it is claimed for Ammonius that he invented an instrument for the practice of lithotomy.

About B.C. 150, arose the sect of the Essenes (or Therapeutes), who studied the properties of natural substances, whether sanative or poisonous. In the application of their remedies, however, they employed the mystic ceremonies of the Persians. They attired themselves in white garments, and observed with care the rules of a strict morality. The example of the Essenes, in the study of plants and minerals, was followed by kings and princes. Mithridates, King of Pontus, living always in fear of being poisoned, endeavoured to turn the arts of his enemies against themselves, and attained to a special knowledge of poisonous drugs. After a chequered reign, he was betrayed by his sons, and reduced to extreme misery; whereupon he tried to poison himself, but the poison, which had killed two of his daughters, had no effect on himself, because he had so fortified his constitution, it is said, by

continually taking antidotes. A composition which he invented for this purpose bore his name, and was long held in high repute. The Mithridaticum, as it was called, consisted of twenty leaves of rue, a few grains of salt, two walnuts, and two figs, made into a confection.* It was taken every morning fasting, and a draught of wine after it. The medicinal properties of this strange compound would, in the main, be confined to the rue; which Sir John Hill describes as "excellent in fevers; it raises the spirits," he adds, "and promotes sweat."

Contemporary with Mithridates was the celebrated physician Asclepiades, who, as he deserted the ways of the orthodox, has met with scant favour from medical historians. He was a native of Prusa, in Bithynia, and earned a scanty livelihood by grinding at a mill during the night, in order that he might attend lectures on philosophy during the day. From Alexandria he removed to Rome, where he applied himself to the study of Medicine. Striking out for himself a new path, he undertook what may be called a dietetic treatment of diseases, seldom having recourse to drugs, and never to those of a violent character. His reliance was upon minute details of regimen, exercise, baths, and friction—four remedial agents, the value of which is fully appreciated by the enlightened practitioner of the present day. Pliny describes him as an audacious quack, who prospered by humouring the inclinations of his patients, and prescribing what he knew would please

* We give the original Latin of Serenus Sammonicus:—

"Antidotus verò multis Mithridatica fertur
 Consociata modis, sed Magnus scrinia Regis
 Quum raperet victor, vilem depreudit in illis
 Synthesin, et vulgata satis medicamina risit;
 Bis donum rutæ folium, salis et breve granum,
 Juglandesque duas, totidem cum corpore ficus,
 Haec Oriente die paucò conspersa Lyæo
 Sumebat; metuens dederat quæ pocula mater."

them; but his practice, as described by Galen, has a good deal of sound common sense to recommend it, though complicated, of course, with many errors and absurdities. His liberal use of wine, for instance, must in some cases have been dangerous, and in very few beneficial.

The Methodici were followers of Themison of Laodicea (pupil of Asclepiades), who took up a position independent both of the Dogmatists and the Empirics. In answer to the former, he protested that the science of Medicine could not consist in forming conjectures on occult causes; in answer to the latter, that the observation of experience was not in itself sufficient to discover the true method of treating disease, but that as diseases differed, so must the treatment. But as he classified all diseases under three forms, it cannot be said that he conformed to his own principles. It must be noted that he was the first to describe Rheumatism, and give it a place in nosology.

The Methodici "took advantage of everything which appeared to be useful in the elucidation of the phenomena of life, and of the treatment of diseases. In the study which they gave to anatomy they approached the Dogmatists, and in repudiating all etiology and special diagnosis, they approached the Empirics. They separated themselves from both, however, by deducing their indications of treatment from the general principles, which they denominated *strictum* and *laxum*, on which their analogism was founded, and from which they adopted the name of Methodici, confining themselves neither to the remedies which the study of pharmacy had revealed, nor to the dietetic means of Asclepiades. The Methodici founded all their propositions on the doctrines of Epicurus (B.C. 341), who followed closely in the footsteps of Democritus. Both regarded all matter as made up of eternal and indivisible atoms, which atoms, arranging themselves according to a natural tendency, irrespective of a Creator,

produced all physical phenomena, whether of health or disease. The great object of the sect was to reduce the science of Medicine to as few general laws as possible; hence, starting with the above proposition, they referred all diseases either to a state of *strictum*, or constriction, in which the pores of the animal tissues were supposed to prevent the healthy escape of atoms; or to a state of *laxum*, or relaxation, in which the pores were supposed to admit too free an escape of atoms. Their remedies were naturally divided into relaxants and astringents. They repudiated the great doctrine of the restorative power of nature in the removal of disease, as propounded by Hippocrates, and trusted entirely to their remedial appliances. They inculcated the use of gymnastic exercises, not only as remedial agents, but also as a means of counteracting the bad effects of increasing luxury and indolence; and although the Gymnasia, in which the exercises were conducted, degenerated, and the subjects, like our modern pugilists, became, as is recorded of them, dull, stupid, and gluttonous, yet can it not be doubted that, under proper and judicious management, the Gymnasia might still be resorted to as a means of insuring a robust habit of body and a vigorous constitution of mind. From this mere sketch of events, as they successively occurred, it must be admitted that no sooner was a real inductive system suggested by Hippocrates, than it was forsaken for vague speculations on the one hand, and an irrational empiricism on the other; but the one great pathological doctrine of Hippocrates, that the fluids of the body are the primary seat of disease, became the fixed idea, under the denomination of the *Humoral Pathology*, and was maintained as the prevailing opinion of most sects and theorists until the commencement of the eighteenth century."

In surveying the history of Medicine one cannot but be impressed by the late and tardy development of this noble science.

From its intimate connection with human well-being and the prosperity of nations, one would have supposed that the resources of man's intellect would from the earliest ages have been exhausted upon it. But while Literature attained to the lofty standard indicated by the poetry of Homer and Pindar and the drama of Æschylus and Sophocles; while the art of Sculpture reached its climax in the glorious handiwork of Phidias; while that of Painting produced an Apelles and a Zeuxis; while Architecture in the full ripeness of its powers created a Parthenon and a Temple of Neptune; Medicine stumbled hither and thither with timid, faltering steps, uncertain as to its proper course, and misled rather than assisted by its professed guides. Until Hippocrates appeared, it cannot be said to have owned any fixed principles of operation, and those which his clear and strong intellect formulated were, as we have seen, disputed by many of his successors. Even in Anatomy, which furnished the inquirer with, so to speak, a fixed basis or well-defined sphere of research, the progress made was singularly slow; and it is almost amusing to observe with what gravity the historian records the minute advances of discovery—how this or that membrane was detected, or certain bones were distinguished and named; just as the astronomer tells us that in this year a planet was discovered, and in that a comet recognized. Physiology, as everybody knows, is a comparatively recent creation, and in Chemistry the greatest achievements have been made within the last hundred years. So that Medicine of all the sciences, has had the slowest growth; and apart from the two branches to which we have just referred, is still the furthest from maturity. We are still in the dark as to some of the most important of the phenomena of cerebral action; the heart still presents mysteries which we have failed to resolve; even of the remedial agents which we employ our knowledge is vague and imperfect, and the principle of life still eludes our search.

The next illustrious name in the history of Medicine carries us to Rome, which was behind Greece in this particular science, as it was in letters and the arts.

The most celebrated writer of the Latin School was AULUS CORNELIUS CELSUS, who flourished in Rome about the beginning of the Christian era. Unfortunately, nothing is known of his personal history. We cannot even decide whether he was a physician by profession, or a man of letters who chose Medicine as an attractive subject for his pen. At all events, we are indebted to him—though many a young student would doubtlessly repudiate the debt—for a valuable summary of the opinions and practice of the physicians of his time, in his treatise “*De Re Medicâ*,” written with an elegance of style equalling that of the best of his contemporaries. His work derives a special importance from the fact that it is the first complete medical treatise which we possess in succession to those of Hippocrates, composed four centuries earlier. Of all the post-Hippocratic literature we possess only a few broken fragments until we come down to Celsus and his book.

The author of “*De Re Medicâ*” is characterized by Littré as a man who knew how to discuss the truth—too practical to be led astray by theories, of too rich a judgment to fall into the extravagances of a blind empiricism; as a writer, chaste and polished enough to do no dishonour to the Augustan age. To possess a clear judgment and solid information, and, more, to be almost the only representative of an epoch, are excellent recommendations.

We borrow from this great writer a brief statement of the systems of medicine which contended for the mastery in his time :—

“As we encounter, at the outset, a divergence of opinions, since some admit only the authority of facts, while in the eyes of others experience is insufficient unless combined with an intimate knowledge of the human body and of natural things,

we shall exhibit the principal arguments put forward on both sides, so that we may the more easily indicate our individual sentiment. The adherents of Rational Medicine assert, then, that the physician should be acquainted with the causes, secret and immediate as well as apparent, of diseases ; that he should know the natural actions ; and, lastly, the conformation of the internal organs. Hidden causes they call those which enjoin on us the necessity of ascertaining what are the principles of the body, and what constitutes good and bad health ; for they consider it impossible to assign a suitable treatment to maladies of which the source is unknown. They will not have it to be doubtful that the treatment must change according as the malady shall be caused—as in the view of certain philosophers—by the excess or deficiency of the free elements. It will vary, if we place the morbid principle in moisture (or humidity) with Herophilus, or in the spirit (*pneuma*) with Hippocrates ; it will vary, if we say with Erasistratus, that the blood, by expanding in the veins intended to receive the air, excites inflammation ; it will no longer be the same if we hold the opinion of Asclepiades, that the atoms in circulation clog in the imperceptible pores of the body, and form an obstruction. He, then, will most surely effect a cure who shall not be mistaken as to the primary cause of the disease. The necessity of Experience is also acknowledged by the Dogmatists ; only they profess that it cannot be acquired without the aid of Reason. . . .

“ Among the causes which they call evident, they wish to know if it be to the influence of heat or of cold, to abstemiousness or excess in diet, or any other analogous circumstance, that the attack of a disease must be referred ; for if we can but arrive at the source of the evil, they think it will be easy to prevent its consequences. Under the name of natural actions of the body, they designate the phenomena of respiration, deglutition, and nutrition. Again, they are anxious to

know for what reason the pulse and the arteries are alternately raised and depressed, and what produces sleep and wakefulness. In ignorance of these causes they consider it impossible that any one should be able to prevent or to cure the maladies which grow from them. . . . Further, pain and ills of various kinds attack our internal organs, of which they see no means of restoring the integrity unless we understand their structure. When an internal ailment comes on, can we accurately define its seat if we do not know the position of the viscera and of other internal organs? And how treat a diseased organ of which one has not even formed an idea?

“Those on the contrary who call themselves Empirics, because they rely upon experience, certainly admit as necessary the knowledge of evident causes; but they maintain that it is idle to raise the question of the hidden causes and actions of the body because nature is impenetrable; and the proof that she cannot be understood is the discord which prevails in this discussion, since neither philosophers nor physicians have ever been able, on this point, to arrive at an agreement. And, in fact, why should one adhere to the opinion of Hippocrates rather than to that of Herophilus, to that of Herophilus rather than to that of Asclepiades? If we turn our attention to arguments, they seem all equally plausible; if we rely upon cures, we find that all physicians have brought back the sick to health. One is unable, therefore, to reject either the objections or the authority of any. If the art of reasoning made physicians, there should be many of them greater than the philosophers; but they have in excess the science of words, and not of that of healing. . . .

“It is better to be ignorant how digestion takes place, so long as we know what digests most readily, in whatsoever manner that function may be accomplished, by action or by simple dissolution. Instead of interrogating the causes of respiration, it is preferable to seek the means of relieving its

slowness and embarrassment; and rather than puzzle about the beatings of the arteries, to study the value of the indications afforded by the variations of the pulse. Now, all this knowledge comes to us from experience. . . . Similar reasons induce the Empiricists to put aside as useless the dissection of dead bodies. This operation, of course, is not cruel, but it is repulsive; and, generally, it brings before us the organs only as they have been changed by death, while practice teaches us all that it is possible to know during life."

It is sometimes said that Medicine has made no progress since the days of Hippocrates or Celsus or Galen, and that modern physicians effect no more cures than their ancestors. This can be true only of the general outlines of the science; in all other respects it is disproved by facts. What does Littré say? * That we know, incomparably better than of old, what are the symptoms of disease. This alone constitutes an inestimable advantage, and would regulate therapeutics even if new and powerful remedies were not at our disposal. Herophilus ingeniously said that medicines were the hands of physicians; well, those hands are multiplied considerably for present use. The older practitioners were unacquainted with quinine, alcohol, iodine, ipecacuanha, the antimonies, strychnine, electricity, most of the arsenical and mercurial compounds, and many other agents which it would take too long to enumerate. Then, if we recall all that has been accomplished in surgery, we shall conclude not only that therapeutic means are much more numerous, but that we have learned how to use them with more discernment and greater skill.

We have referred to the slow and tardy progression which the history of Medicine reveals. But it must be confessed that enormous difficulties beset the infant science. All was at first blank ignorance—the sick subject and the means of cure. When fever dried the skin, when breathing became difficult,

* LITTRÉ, *Médecine et Médecins*, p. 149.

when the limbs tottered, how were these incidents to be accounted for? How discover that one plant was an emetic, and another a purgative? How determine the doses? How ascertain that bleeding relieves—that blisters neutralize pain—that cauterizations dissipate obstructions? Necessity—*duris urgens in rebus egestas*—was the perpetual stimulus of effort; but before a safe and efficacious method of treatment could be formulated—before facts could be properly appreciated and duly collocated, it was inevitable but that great mistakes should be committed, that much labour should be wasted, and that the inquest after truth should be delayed by many obstacles.

One of these obstacles was the superstitious tendency of the human mind; a tendency specially observable in the last days of the old paganism, when the faith taught by the apostles of Christianity was too frequently transformed by their disciples into an irrational credulity, and the belief in miracles degenerated into a belief in all kinds of pretended supernatural agencies. The priests in the temples of Æsculapius boasted loudly of the wonderful cures effected at the altars of the God of Healing; but were surpassed by the professors of the black art, or necromancy, who pretended to restore the blind to sight, and almost the dead to life. A few seekers after truth, however, made their appearance from time to time, and, by the ardent investigation of nature, endeavoured to advance the interests of medical science. We read of Nero's physician, Andromachus, who first received the title of Archiater (*ἀρχίατρος*), or "superpositus medicorum," and invented a celebrated compound called *Theriaca*. He describes its composition in a Greek elegiac poem, which he dedicated to his imperial patron. Previously, the Antidote of Mithridates had stood alone, and enjoyed universal patronage; but as soon as that of Andromachus appeared, it went entirely out of use.

The *Theriaca* contained upwards of sixty ingredients, a large portion of which were spices. There were also some

common simples, and some gums or inspissated juices, of which opium was the most important. But the compound derived its name (*θερίον*, a venomous animal) from vipers, prepared in the following manner:—The head and tail were cut off, and the creature's skin removed; then the flesh was separated from the entrails and bones, well washed, and stewed in water with aneth and salt; afterwards kneaded into a paste with breadcrumbs, and made into tiny cakes. If this Antidote had possessed all the qualities claimed for it by its inventor, no other remedy would ever have been needed. Primarily he administered it as invaluable in all cases of poisoning. Also for pains and weakness of the stomach; asthma, and oppression on the chest; in the early stages of phthisis; for empyema, colic, jaundice, dropsy, weakness of sight, convulsions, ulcers of the bladder, the plague, and so on. It reads like a catalogue of the numerous diseases "cured" by Holloway's Pills or Mother Siegel's Syrup. The mode of preparation was this: The spices, and all the other ingredients as far as possible, were reduced to powder. The gums and essences were dissolved in Falernian or Cretan wine, and filtered through a sieve. Then the whole was thoroughly mixed up and kneaded together in thrice its quantity of Attic honey.

From Andromachus we pass on to Macinus, who studied anatomy, and wrote a treatise on the Muscles. His pupil, Quintus, was practising in Rome when the pestilence broke out in A.D. 79, and being powerless to cope with it in the then state of medical knowledge, was driven from the city in disgrace. An infinitely greater name is that of Dioscorides, the author of a celebrated treatise, "*De Materiâ Medicâ*,"* who is commonly represented to have been a native of Anazarba, in Cilicia Campestris, and a physician by profession. For sixteen centuries he was the greatest authority in Medical Botany. He traversed Asia Minor, Greece, Italy, and Gaul,

* *Περὶ Ὑγιᾶς Ἰατρικῆς*, edit. by Sprengel (Leipzig, 1829 30).

D collecting plants and investigating their qualities, and the result of his labours is conspicuous in his great work, which describes about seven hundred medicinal plants, besides ninety minerals, and one hundred and sixty-eight animal substances.

Archigenes, the earliest writer on dysentery, for which he suggests opium as a remedy, is immortalized by his contemporary, the satirist Juvenal—

“Tum corpore sano
Advocat Archigenem.”

He had also the rare honour of favourable notice from Galen, who speaks of him as acquainted with everything that related to the Art of Healing, and adds that his wide knowledge gives value to the large number of treatises he left behind him. But he was inferior in soundness of judgment and extent of information to Uretæus of Cappadocia, who was the first person to employ blisters as counter-irritants and to show the glandular nature of the kidneys. Like Archigenes, he belonged to the Eclectic School, the members of which professed to adopt all that was best in the teaching of the Dogmatists, the Empiricists, and others. It is sometimes alleged that he distinguished the nerves of sensation from those of motion; though it seems more probable that his supposed nerves of motion were really the sinews or tendons, which the physicians of antiquity generally confounded under one name with the nerves.

But the name which rises with planetary splendour above the dim horizon of this remote period is that of

GALEN.

“One of those extraordinary men,” as Dr. Bostock says, “who are destined to form an era in science, both from the actual improvements which they have introduced into it, as well as from the ascendancy which their genius enabled them to acquire over the minds of their contemporaries.” It was

his good fortune to win the suffrages of his own age as he has commanded those of posterity. Athenæus, who lived about the same time, shows the high esteem in which he held him by introducing him into his "Feast of Philosophers"; a homage which he renders him in acknowledgment of the force and clearness of his style. Eusebius, who flourished a century later, says that the reverence with which he was regarded went to such an extent, that with many he was the object of a religious *cultus*. Trallian designates him the "most divine." Oribasius, who followed close upon Eusebius, and was himself a physician, makes numerous extracts from his writings—the highest compliment that you can pay an author. Aëtius, and Paulus Ægineta, have also copied him, particularly the latter; and the physician Athenæus has commented on one of his books. So, too, Avicenna, Averroës, and the other Arabian physicians, having borrowed from Galen all that is best in their own writings, combined to chant the praise he so well deserved.

Claudius Galenus, or Galen, was born at Pergamos, in Asia Minor—a city once famous for its Temple of Æsculapius—about A.D. 130, in the fourteenth or fifteenth year of the Emperor Hadrian. His father was a reputable architect and geometer, named Nikon, whom his son always speaks of with respect and affection—a respect and an affection which he merited by the great and liberal care he bestowed on Galen's education, procuring for him the best teachers in philosophy, astronomy, geometry, and architecture. To his mother his references are less kindly. He admits that she was an excellent housewife, and, strangely enough, praises her chastity; but he dwells on her violent temper, and says that she lived with his father on the same terms that Xantippe lived with Socrates. Galen, at first, was intended to be a philosopher, and studied successively in the schools of the Stoics, the Academics, the Peripatetics, and the Epicureans; but at

seventeen years of age he embraced the profession of Medicine, moved thereto by a dream of his father's. With all the activity of a strong intellect he took up the necessary studies, and in turn exhausted the knowledge of a long train of masters—Ælianus Meccius, Numesianus, Pelops, Stratonieus, Satyrus, Phesianus, Heraclianus, Æschrion--worthies whose names alone have descended to these later ages. Some of them seem to have been pupils of Quintus; and it is noticeable that Galen, in his writings, frequently alludes to Quintus with respect, though his principles were diametrically opposed to his own. "Quintus," he says somewhere, "would often remark, jestingly, that cold, heat, dryness, and moisture, were names or qualities which concerned bathers much more than doctors, and that the examination of urine he would leave to painters or dyers."

His activity as a student increased after his father's death, which took place about A.D. 150, and he travelled much in foreign countries, in order to profit by the teaching of the most eminent of living physicians, and to acquaint himself with the properties of the medical plants they produced. He resided for some years in Alexandria; and we know that he also visited Cilicia, Palestine, Crete, Cyprus, and Syria. He was twenty-eight when he returned to Pergamos, and began to practise there both as physician and surgeon. Four years later, a seditious outbreak led him to repair to Rome. In the Imperial City, his remarkable professional skill and wide and varied knowledge soon gained him a liberal reputation; but the warmth of his temper, which he inherited, perhaps, from his mother, exhibited itself to such an extent in his discussions with his professional brethren, as quickly to surround him with enemies. He made many remarkable cures, particularly in the case of the wife of the celebrated Boëthius, who rewarded him for his services with a fee of four hundred pieces of gold; and these successes did not tend to diminish the jealousy and

hatred he had excited. He thought it advisable, therefore, to leave Rome in 167; but as immediately afterwards a very severe pestilence broke out, the envious world attributed his departure to cowardice.

He was recalled from Pergamos to attend the Emperors Marcus Aurelius and Lucius Verus at Aquileia; and on the death of Verus re-appeared in Rome, where he spent some years as physician to the imperial family. Of the remainder of his life, the few particulars to be gathered up from later writers are very vague, and, to some extent, contradictory. The date and place of his death are unknown; but all authorities agree that he reached a ripe old age, and some pretend that he was 140 when he died.

Galen was a man of high intellectual acquirements. He was not only the ablest and most accomplished physician of his age, but well versed in every branch of philosophy and literature. He was also inspired by a sincere religious enthusiasm. His great physiological work, "*De Usu Partium Corporis Humani*," is, to some extent, a dissertation in natural theology, or, in his own words, a sacred discourse or hymn in prose, in honour of the Creator. "For this," he says, "would be, in my opinion, real piety, not to offer sacrifices and burn incense at His altar, but first, for my own part, to attain to a knowledge of and afterwards to reveal to others, His attributes of Power, Goodness, and Wisdom."

Long as was his life, he must have been a man of unwearied industry and astonishing mental vigour, to have found the time and means for composing his numerous writings, which amounted to about five hundred treatises on medical science, ethics, grammar, logic, and other branches of philosophy. Nearly one hundred and fifty of these have been published; more than fifty others may lie unknown in different European libraries; the rest have perished. It is true that many of them consist of only a few pages, put together, *currente calamo*, to

meet a temporary exigency; but others are elaborate works, the outcome of profound reflection and assiduous inquiry—works which bear the impress of a master-mind. To enumerate Galen's various compositions would occupy much more space than we can afford, and the catalogue would possess little interest or value for the general reader. They are specified with much care by Leclerc and Sprengel. See also the article "Galen," in Dr. Smith's "Dictionary of Greek and Roman Biography;" and Kuhn's fine edition of the great physician's works, in twenty volumes, published (with a Latin translation) at Leipzig in 1821-1833. The most important of the early editions was issued by Andrew of Asola in 1525.

At the same time it would be impossible for the reader to form any accurate idea of the place Galen occupies in the development of Medical Science, without a knowledge of at least the principal results of his labours, which were directed to the investigation of every branch of medicine, except chemistry. His chief anatomical work is entitled, "*De Anatomicis Administrationibus*," and consists of fifteen books, of which only eight are extant in Greek. The Bodleian Library at Oxford contains an Arabic translation, which is supposed to be unique. In physiology, his *magnum opus* is the noble treatise, already mentioned, "*De Usu Partium Corporis Humani*," in seventeen books. To pathology, his most important contribution is the "*De Locis Affectis*," in six books. He adheres to the old theory of the four humours, blood, phlegm, bile, and black bile, and the four elements, air, fire, earth, and water, representing respectively the qualities of cold, heat, dryness, and moisture. His principal work in the departments of dietetics and hygiene are "*De Sanitate Tueudâ*," in six books, containing a sensible summary of the laws of health, which shows him to have been much in advance of his time. In his "*De Alimentorum Facultatibus*" (three books), he gives a detailed account of the properties of different articles of food.

Under the heads of diagnosis and scienciology, we may mention the "*De Criticis Diebus*" and "*De Crisibus*," each in three books; "*De Differentiâ Morborum*," "*De Morborum Causis*," "*De Symptomatum Differentiâ*;" "*De Causis Symptomatum*," in three books. These four are, in reality, parts of one great and connected whole. His series of treatises on the pulse comprise "*De Pulsibus, ad Tirones*," "*De Differentiâ Pulsuum*," "*De Dignoscendis Pulsibus*," "*De Causis Pulsuum*," and "*De Præsagitione ex Pulsibus*," and "*Synopsis Librorum suorum de Pulsibus*." His skill in diagnosis was so great as almost to justify his assertion that, with the blessing of Providence, he had never made a mistake. He believed implicitly in the doctrine of critical days, and affirmed that a careful observance of them would enable a physician to indicate the very hour of the termination of a fever. From his minute enumeration of the different kinds of pulse, we may infer the value he set upon it as a basis of diagnosis and prognosis.

In materia medica and pharmacy, his most important works are, "*De Simplicium Medicamentorum Temperamentis et Facultatibus*," eleven books, and "*De Compositum Medicamentorum secundum locis*," ten books, with its companion or supplement, "*De Compositum Medicamentorum secundum genera*," seven books.

The largest and weightiest of his works on therapeutics is the "*Methodus Medendi*," in fourteen books, written in his later years. His shorter treatise, "*Ars Medica*" (also known as "*Ars Parva*"), was at one time a very popular text-book. In explanation of the writings of Hippocrates, at whose feet he sat like Paul at the feet of Gamaliel, he wrote numerous critical and exegetical commentaries. His most interesting philosophical compositions are: "*Quod Optimus Medicus sit quoque Philosophus*," "*Oratio Suasoria ad Artes*," "*De Hippocratis et Platonis Decretis*," "*De Sectis, ad Tirones*," and "*De Optima Secta, ad Thrasybulum*." Both by the Greeks and

the Arabians he was highly esteemed as a logician, and his name is still commonly connected with the fourth figure of a syllogism.

Without attempting to specify the exact amount of his anatomical knowledge, which was very considerable (he was the first writer who gave a clear account of the vertebræ), or of his researches in physiology (he detected the true character of the arteries, but his theory of respiration was erroneous), we may sum up his great merits as one of the founders of medical science, thus: "The end he kept in view was the formation of a perfect system by utilizing the logical rules and ideas he derived from the older philosophy in the light of his own experience, and with the aid of some traditional principles of the school of Hippocrates. He belonged, therefore, to the school of the Dogmatists, and was opposed to that of the Empiricists, yet he was far from sacrificing facts to theory.

"He recognized an external or accidental, and an internal or predisposing cause of disease, and endeavoured to found his system of treatment thereon; so that, in truth, medicine in his hands, as in those of Hippocrates, was a science which, more than any other, anticipated the Baconian philosophy, for it was based on an induction proceeding by select experience, always observant, always cautious, and ascending slowly to the generalities of theory.

"The great duty of the physician he described to be that of maintaining the different parts of the human body in their healthy condition, and of re-establishing their healthy functions when diseased. His theory of the action of medicines prevailed so long, and was accepted by so many nations, that a brief exposition of it may not be uninteresting. He assumed that the difference in the actions of medicines arose from each one being, to a certain degree, either hot or cold, or dry or moist, or consisting of minute or gross particles. In each of

these qualities he recognized four degrees, or orders, one being imperceptible to the senses, and only to be inferred from reflection; the second being perceptible to the senses, and, therefore, not necessarily inferred from reflection; the third being strongly heating, or cooling, or desiccating, or humectating; and the fourth so strong as to destroy the tissues of the body to which it might be applied."

Among the contemporaries of Galen mention must be made of Soranus of Ephesus, so called to distinguish him from other physicians of the same name. He was educated at Alexandria, but in the reign of Trajan established himself at Rome, and practised there with great success. He belonged to the school of the Methodici, which profited considerably by the reflected lustre of his reputation. Most of his research was given to the structure and formation of the reproductive organs, and his views on this subject have been preserved by Cœlius Aurelianus. Galen records some of the remedies which he employed in cases of leprosy, a disease which, originally imported from the East by Pompey's army, had acquired an endemic character in Italy. He was the first who observed and described the parasitic worm known as the Guinea-worm (*Filaria Medinensis*), which is still one of the scourges of Egypt, Arabia, Abyssinia, and Guinea.

Cœlius Aurelianus, to whom we owe in chief our knowledge of the opinions of Soranus, whom he everywhere acknowledges as his master, and honours as "the prince of his sect," seems to have been of African birth. On the title page of his principal work he is styled *Coelius Aurelianus Siccensis*—"Siccensis," from Sicca, a town in Numidia. He is supposed to have lived shortly after Soranus, whose system he adopted, and whose writings he translated into Latin. Leclerc furnishes an exhaustive summary of his treatise on Lingering and Acute Diseases.

An important event in the annals of Medicine was the public recognition of its practitioners by the Emperor Constantine, who, desiring to relieve his subjects from the pressure exercised by quacks and magicians, divided the orthodox and trained physicians into two classes, the *Archiatri* of the Palace (*Archiatri Palatini*), and the *Archiatri* of cities (*Archiatri populares*). The former constituted a guild or corporation, whose members were exempted from public burdens, and rewarded with various other privileges and immunities. Their president, or *Comes*, was a "vir spectabilis," equal in rank to the Imperial dukes and vicars. The latter were elected from the general crowd of practitioners by the citizens, and approved by the *Archiatri Palatini*. Five were allowed in every small town, seven in the larger, and ten in the largest. In Rome fourteen were allotted to the different districts, besides one for the vestal virgins, and one for the gymnasia. These, too, were relieved from public burdens, and also received from the towns an allowance in kind (*annonaria commoda*), as well as a salary from the state, for which they undertook to attend the poor gratuitously. In each town they formed a medical board or college, which had charge, not only of the medical profession, and of the instruction of students, but of the public health.

"Were it possible," says Meryon, "to represent to the mind's eye the precise condition of the entire class at this particular period, in all probability an orthodox and ingenuous minority would appear, intent only on achieving an efficient and perfect system of practice, pursuing their sacred calling for the good of all in the midst of a crowd of subordinate and superstitious operatives, of whom the greater part were monks and ecclesiastics, as we may learn from the melancholy picture which Cyprian and Origen have drawn of the time; or, worse still, of ignorant pretenders who trafficked on the credulity of their fellow-creatures by magic and other delusive frauds, to the utter disregard of common sense, and of the rules deduced

from the experience of the ancients. It was, in short, an age of miracles and prodigies, when sorcerers vied with saints in their pretensions to supernatural power; and the popularity of the illusions precipitated the downfall of the Alexandrian school, which was still regarded as the focus of all learning. That school felt and reflected the influence of the transitional state of that mighty power which, for seven hundred years, overshadowed the earth with its universal dominion; and when history comes to be made a faithful exponent of the medical profession as it then existed, we find it rapidly degraded to a vacillating compromise, wherein the views of the old sectarians are jumbled together as in a kaleidoscope, to form a dogmatico-empirical school, combined with the tenets of the Methodists and Eclectics. Eventually it is dwarfed to the narrow compass of a mere biographical sketch of a few individuals, whose names, with one or two exceptions, are worthy of record more in consequence of their conservative virtues than of any advance they made in knowledge; while the western world generally sunk back, as by one common consent, into that benighted ignorance which characterized the succeeding centuries, so justly called the Dark Ages."

Among the Archiatri, in the fourth century, and in the reign of the Emperor Julian, who honoured him with his intimacy,* was Oribasius of Pergamos. His great work, "*Συναγώγαι Ιατρικαί*" (*Collecta Medicinalia*), which was written at the instance of the Emperor, and dedicated to him, furnishes a summary of medical knowledge as it then existed. It was divided into seventy-two books, of which only seventeen have been preserved. Though in his preface he specifies his obligations to Galen, which were so extensive that he has been called "Galen's Ape," he does full justice to Hippo-

* Julian confided to him the secret of his apostasy from Christianity, and made him quæstor of Constantinople.

crates, and expounds his ideas with as much fidelity as precision.

An abstract of this great work, in nine books, which he wrote for his son, Eustathius, and dedicated to his friend (and biographer) Eunapius, is still extant.

We owe to him a description (partly borrowed from Dioscorides) of the method of preparing medicaments, and accounts of various distempers, including a singular epidemic which he regarded as a kind of melancholia. The sufferers, he says, wander from their homes in the night time, in everything imitate wolves, and haunt the resting-places of the dead until day-break. They may be known by the following symptoms: pale complexion; eyes heavy, hollow, dry, and absolutely tearless; tongue exceedingly dry and parched; mouth wanting in saliva; extreme thirst; their limbs covered with innumerable sores from the falls and bruises they have received.

To Oribasius is due the first description of the *membrana tympani* (or drum of the ear), and of the salivary glands.

So successful a physician—in the Greek Anthology may be seen two epigrams in laudation of him—necessarily made many enemies. It is said, by the way, that even in the present age of philanthropy and benevolent sentiment, successful physicians are equally unfortunate. These prevailed against him when the death of Julian* deprived him of imperial protection. He was deprived of his estates and banished from Rome. Adversity, however, did not overcome his composure of mind or disturb the fine serenity of his temper; and “the barbarians,” among whom he exercised his rare medical powers, so deeply loved and revered him, that they worshipped him with almost divine honours. Eventually, Valentinian II. recalled him to Rome, restored him to his estates, and lavished upon him special distinctions. He died about 400.

* At which, it is said, he was present.

Eunapius speaks of him as the greatest physician and scholar of his age, and as a man of most attractive manners and agreeable conversation.

The name of Nemesius cannot be overlooked, if for no other reason than that the opponents of Harvey ascribed to him the credit of having discovered the circulation of the blood. But that the claim cannot be supported, is apparent from the very passage on which his advocates relied. It is taken from his interesting and ingenious philosophical treatise, *Περὶ φύσεως ἀνθρώπου* (*De Natura Hominis*): — “The motion of the pulse,” he says, “originates in the heart, and chiefly in the left ventricle. The artery is with great vehemence dilated and contracted by a kind of constant harmony and order. While dilated, it draws with force the thinner parts of the blood from the next (or adjoining) veins, the exhalation or vapour of which becomes the nourishment of the vital spirit. But while contracted, it exhales whatever fumes it possesses through the whole body, and by secret passages, just as the heart gets rid of whatever is fuliginous through the mouth and nose by expiration.”

Nemesius, who lived about 370-430, is styled by Anastasius Nicenus “Bishop of Emera,” in Syria. A good edition of his treatise was published by Matthæus in 1802. It has been translated into English, French, German, and Italian.

Among the Christians who suffered during the persecution ordered by Marcus Aurelius, Commodus, and Verus, and have been canonized by the Church of Rome, were Sanctus Papilius, who was martyred at Pergamos, and Alexander, who died at Lyons.

Towards the close of the fifth or the beginning of the sixth century flourished Aëtius, a Greek physician of Amida in

Mesopotamia (Diabeker). He was a Christian, studied in the famous school of Alexandria, and afterwards established himself in Constantinople, where he became physician to the Imperial Court. His compositions are distinguished by intellectual acumen and extensive research, but owe no little of their attractiveness to the gem-like fragments from Greek writers whose works have perished with which they glitter. Like Oribasius, he compiled a synopsis of the medical knowledge of his predecessors, and particularly of Galen, which he published in sixteen books under the title of "Tetrabiblos." It contains two points worthy of notice: the statement that the actual cautery was in use in his day as a remedy for palsy, and the earliest known reference to the medical efficacy of the magnet. "They report," he says, "that patients suffering from convulsions, or from gout in their hands or feet, are relieved by holding a magnet."

The work of Aëtius was translated into Latin by Janus Cornarius, a physician of Frankfort (author of the treatise, "De Conviviis Veterum Græcorum"), and published at Basel in 1542. Boerhaave commends it highly, declaring that to the physician it is of the same value as the Pandects of Justinian are to the lawyer.

At the end of the sixth or the beginning of the seventh century, flourished Paulus Ægineta, a native, it is said, of the island of Ægina. Of his life very little is known; but it is thought that he studied at Alexandria previous to the capture of that city, and the destruction of its famous library, by Amrou and his Saracens, and that he travelled through Greece and other countries in quest of medical knowledge. He lives, however, in his immortal work, "De Re Medicâ,"* which, in its seven books, furnishes an exhaustive view of medical science, as understood and practised by the Greeks, Romans, and

* Translated by Dr. Francis Adams for the Sydenham Society, 1844.

Arabians. He also wrote an abridgement of the works of Galen, and a treatise on "Dart and Arrow Wounds," which is praised by Fabricius of Acquapendente. His writings on Midwifery, in which he practised with success, obtained for him from the Arabians the title of "the Accoucheur."

To the sixth century also belonged Alexander of Tralles, or Alexander Trallianus, one of the most famous physicians of his age, and, by profession, a Christian. He was born at Tralles, in Asia Minor. Nothing more is known of his life than that he travelled in France, Spain, and Italy; began to practise medicine in Rome; and grew into a great reputation. It is evident from his valuable work, *Βιβλία ἱατρικὰ δωκαίδεκα* ("Twelve Books on Medicine"), an elaborate and exhaustive inquiry into all the diseases of the human body, that he was a man of large erudition and keen intellect, much in advance of his age in scientific views. In Therapeutics none of his predecessors were so accurate and sagacious; none had a clearer conception of the effects of the remedies he prescribed; and his resort to charms, and amulets, and talismans, would seem to have arisen from his desire to propitiate his wealthy and superstitious patients, rather than from any feeble credulity of his own. This, indeed, is the excuse he himself puts forward. That he could strike out an independent course we know from his daring to open the jugular vein in apoplectic disease, and his administering steel in substance; and also from his revolt against the absolute authority of Galen, whose rules of treatment he frequently censures as injurious. In cases of gout he insisted upon a rigid regimen, and freely prescribed the *Hermodactylus*,* which is understood to be identical with the *Colchicum autumnale*.

His treatise was translated into Latin by Haller, and

* The plant now known by this name was used as a gentle purgative by the old herbalists.


abridged by Dr. Edward Milward under the title of "*Trallianus Redivivus*," as a proof that some of the Greek writers who flourished after Galen were capable of original inquiry and reflection.

6-10
From Aëtius and Alexander Trallianus we may easily gather an idea of the credulity of the age, and the extent to which charms and amulets were accepted as preventives or remedies. Man has an innate indisposition to endure physical pain, an innate apprehension of disease; and in the infancy of medicine, when physicians and their medicaments were virtually the luxury of the rich, it is easy to understand that the common people would eagerly seize upon any object, or adopt any practice, that was accredited to them as gifted with preventive or curative properties. But the superstition was one that infected all classes, and even the learned were not wholly free from it. In the days of the old Paganism, the priesthood, for their own gain, encouraged a belief in the virtues of certain holy places, particularly the temples of their deities. When Christianity was established, the apostles, or popular saints, martyrs, or virgins, were substituted for the dethroned rulers of the classic Olympus, and extraordinary virtues were attributed to their relics. And thus it came to pass that, in the dark ages, properly so called, from the sixth to the tenth century, the art of medicine in Christendom was degraded into a wholesale application of the most credulous methods. And even after the revival of learning, even after the introduction of printing and the Lutheran reformation—the two great events which purified the moral atmosphere of Europe—these methods long continued to hold their ground. We know, indeed, that credulity is not dead yet, and that if the old amulets and talismans have been abandoned, the public have eagerly taken up those more artful inventions which are generally called "patent medicines."

"The Christians," says Gibbon, "frequented the tombs of the martyrs in the hope of obtaining, from their powerful intercession, every sort of spiritual, but more especially of temporal blessings. They implored the preservation of their health, or the cure of their infirmities; the fruitfulness of their barren wives, or the safety and happiness of their children. Whenever they undertook any distant or dangerous journey, they requested that the holy martyrs should be their guides and protectors on the road; and if they returned without having experienced any misfortune, they again hastened to the tombs of the martyrs, to celebrate, with grateful thanksgivings, their obligations to the memory and relics of those heavenly patrons. The walls were hung round with symbols of the favours which they had received; eyes, and hands, and feet, of gold and silver; and edifying pictures, which could not long escape the abuse of indiscreet or idolatrous devotion, represented the image, the attributes, and the miracles of the tutelar saint."

Their invention stimulated by greed, the monks and the clergy multiplied idols, until for every disease some special saint offered his saving interposition—some relic professed its curative power. A sufferer from the stone was directed to supplicate St. Benedict; for diseases of the body, he repaired to St. Lawrence or St. Erasmus; in the plague he invoked St. Sebastian; in hydrophobia, St. Hubert; in access of toothache, St. Apollonia; in cerebral disorders, St. Ottila.

A favourite amulet with the early Christians was the fish, or *Ichthus*, because the word is composed of the initial letters of *Iesos CHristos THEou Vios Sôtēr* (Jesus Christ, Son of God, Saviour). The Bezoar Stone, described as an alvine concretion formed in goats or gazelles, was considered a sovereign remedy in cases of melancholy; and Burton, quoting Mamardus, says that it dispels sadness, and makes him merry who useth it. It was also esteemed as an antidote against

poison. Montfaucon has collected a number of Gnostic amulets, or *abraxas*,* and divided them, according to their inscriptions, into seven classes: the first being engraved with the head of a cock, which is the symbol of the sun; the second, with the head or body of a lion, emblematical of strength; the third bearing the figure or inscription of Serapis; the fourth having figures of sphinxes, apes, and other animals, real or imaginary; the fifth, human figures, with the names Iao (abbreviation of Jehovah), Sabaoth, Adonai, and the like; the sixth containing inscriptions, but no figures; and the seventh, monstrous forms. These were supposed to ward off all kinds of danger from the wearers. But a still greater potency was thought to reside in the interlaced double triangle , especially if the holy name of God were inscribed in the centre. And as a powerful antidote against ague, flux, and toothache, Serenus Samonicus strongly recommended the cabalistic word *Abracadabra* (the name, it is said, of the Assyrian Supreme Deity), written on a piece of parchment, in a triangular form, the said piece of parchment being hung round the neck:—

A B R A C A D A B R A
 B R A C A D A B R
 R A C A D A B
 A C A D A
 C A D
 A

“Amulets,” says Burton, “were approved by Renodeus, Platanus, and others. Bassardus Viscontinus commends Hypericon, or St. John’s wort, gathered on a Friday, in the horn of Jupiter (that is, about the full moon in July), when it

* The word *Abraxas*, or *Abracax*, in the Persian mythology, signified the Supreme Being in his Triune character. It also symbolized the mystic number 365, or the number of subordinate Intelligences, or impersonated virtues, over which Abracax presided, and each of which was supposed to dominate or rule on one day in the year.

comes to its effectual operation. So gathered, and hung about the neck, it mightily helps melancholia, and drives away all fantastical spirits. Philes, a Greek author who flourished about the time of Michael Paleologus, writes that the skin of a sheep or kid, whom a wolf has worried ('raptus ab ore lupi'), ought not to be worn about a man at all, because it causeth palpitation of the heart. A ring made of the hoof of an ass's right forefoot is an amulet of great virtue. Pæony doth cure epilepsy; precious stones cure most diseases; a spider born with one does help the ague."

But the subject is one which we cannot pursue further in these pages.

CHAPTER II.

THE ARABIAN PHYSICIANS.

WHEN Art, Literature, and Science died out in Christendom, they kindled into a new life in the lands of the Moslem. The Caliphs of the dynasty of the Abbassides gave their professors the most liberal encouragement, and in this respect were imitated and even surpassed by the Fatimites of Africa and the Ommiades of Spain. The emulation of these enlightened princes "diffused the taste and the rewards of science from Samarcand and Bokhara to Fez and Cordova." Colleges were founded and splendidly endowed; magnificent libraries collected at an almost incredible expenditure. For about five centuries the Arabs were the conservators of learning, and to their taste and care we owe the preservation of many of the masterpieces of the Greek philosophy. Their success was the most conspicuous in Astronomy and Medicine, though in the latter they were fettered by the commands of the Prophet, which virtually forbade—so far as the human body was concerned—the practice of dissection. But the names of Mesua, and Rhazes, and Avicenna, may fairly be ranked with those of the great Greek physicians. In the city of Bagdad, where the Caliph Almansor founded a famous school of medicine, a college, and public hospitals, were licensed at one time eight hundred and sixty practitioners. A school had previously been formed at Antioch. One, not less celebrated, flourished at Cordova, to which the Christian kings of Leon and Aragon did not hesitate to send for medical advisers; and the school of Salerno, which had a Saracenic origin, had the honour of

reviving in Italy and Europe the practice and precepts of the Healing Art.

“A superstitious reverence for the dead,” says Gibbon, “confined both the Greeks and the Arabians to the dissection of apes and quadrupeds; the more solid and visible parts were known in the time of Galen, and the finer scrutiny of the human frame was reserved for the microscope and the injections of modern artists. Botany is an active science, and the discoveries of the torrid zone might enrich the herbal of Dioscorides with two thousand plants. Some traditionary knowledge might be secreted in the temples and monasteries of Egypt; much useful experience had been acquired in the practice of arts and manufactures; but the *science* of Chemistry owes its origin and improvement to the industry of the Saracens. They first invented and named the alembic for the purposes of distillation, analysed the substances of the three kingdoms of nature, tried the distinction and affinities of alkalis and acids, and converted the poisonous minerals into soft and salutary medicines.” So far, humanity owes a great debt of gratitude to the Arabian chemists; but when they turn aside from the path of true scientific inquiry, they cannot escape our censure, for their empirical search after the elixir of immortal health and the philosopher’s stone engendered the fraud, folly, and falsehood of the Alchemists and the Rosicrucians.

Mr. Hallam remarks that to this Oriental School Pharmacy is considerably indebted, but that it has retained no reputation in physiological or pathological science. Its additions to the *Materia Medica* were very important, including some of the mineral salts, camphor, senna, cassia, musk, manna, aloes, rhubarb, tamarinds, myrobalanus, and nux vomica. Its employment of gems and precious stones has not been imitated; probably, in this direction the Arab physicians were influenced by a lively imagination. They placed an abounding faith in

dreams, talismans, charms, and amulets ; and the absurdities of astrology were allowed to affect their medical treatment.

One of the earliest names which demand our attention is the illustrious MESUA or MESUACH, a Nestorian Christian, who attained to distinction as a physician, and translated several of the Greek medical writers. He was in high favour with the Caliphs Al Raschid and Al Maimra, and employed his influence in the advancement of Science. It is said that he was accustomed to hold philosophical discussions and give lessons in medicine at his own house, and that the play of a lively humour rendered his prelections peculiarly attractive.

Bayle tells us that ALKONDI, or ALKHENDI, who flourished at Bagdad in the closing years of the ninth century, was sometimes called "the Mohamedan Pythagoras." Cardan refers to him as one of the boldest thinkers of his time. According to Sprengel, he propounded the theory that the activity of medicines might be calculated by mathematical or universal rules, and that a calculation of proportions and the geometrical combination of the elements of medicines counted for more in the development of their latent powers than the elements themselves—a bold flight of imagination, certainly, but by no means compatible with the dictates of common sense, since it made the virtues of a remedy lie not in the drugs, but in the manner in which they were mixed !

A more illustrious name is that of RHAZES, or, as the Arabs call him, Abu Beer Mohammed Ibn Zacaríyá Ar-Razi. He was born at Rai, a town in the north of 'Irák 'Agemí, near Chorásán, probably about the middle of the ninth century. His earlier years were spent in his native place, and pleasantly devoted to the study of music and philosophy. When about forty he seems to have felt the want of some definite work in life, and embraced the profession of medicine, travelling in Egypt, Spain, and Syria, in order to acquaint himself with the

then condition of the science. He was afterwards appointed physician to the hospital at Rai, whence he removed to that at Bagdad; and he acquired such popularity as a lecturer that from all countries enthusiastic students flocked to study under him. His scholarship was profound, his experience large and varied, and his keen intellectual perceptions enabled him to utilize both to the highest advantage. In illustration of his conscientiousness we may repeat a well-known anecdote:—

One day, in the street, he saw a crowd surrounding the body of a man, who, they said, had suddenly fallen down dead. After examining him carefully, he called for some rods, with which he began to beat the limbs, and especially the sides of the feet, inviting the assistance of some of the bystanders. He was jeered and laughed at for his folly, but soon the supposed corpse gave signs of animation, and everybody shouted that Rhazes had performed a miracle. The physician, however, gravely and emphatically denied that the resurrection of the dead could be effected by human means. What he had done, he had once seen practised in the desert, where a fellow-traveller had fallen in a fit, and an aged Arab had cut some switches, which, applied as he had applied the rods, had had the same effect.

Rhazes was blind for some years before his death, which took place, it is thought, about 932. He was a voluminous writer, and the titles of upwards of two hundred of his works have been preserved, several of which have been translated into Latin. His most celebrated work is that on the Smallpox and Measles,* the earliest extant relating to those diseases, though Rhazes himself mentions several writers who had previously described their symptoms and formulated rules for their cure. He explains them by the theory of fermentation, and recommends a cooling treatment. It is generally under-

* The best English translation is that by Dr. Greenhill (Sydenham Society), 1848.

stood that Rhazes was mistaken in supposing that Smallpox had been described before his time. That it had existed for ages in Hindustan and China is probable enough, but owing to the isolation of those countries from the rest of the world, it was certainly not introduced into the West until the close of the seventh century. Imported into Egypt by the Arabians, it followed in the track of their conquests, and was in this way propagated over Europe. Measles (*Rubeola*) appeared contemporaneously with the Smallpox. Its scientific name seems to have been derived from the Spanish *rubio*, red. In Italy it was called *Morbilli*, or the Little Plague.

The most important of the works of Rhazes is "*Al-Háwi*," or The Comprehensive Book, commonly called *Continens*, which in the Latin translation fills two folios. It is a kind of *omnium gatherum* of extracts from different medical writers, without any attempt at methodical arrangement. The numerous fragments it contains of works that have perished invest it with exceptional interest. It was translated into Latin by Fracgius, and several editions were issued in the fifteenth and sixteenth centuries. We must also particularize his "*Ketábu-l-Mansúrí*," or *Liber ad Almansorum*, so called from its being dedicated to Mansur, prince of Chorásán. This is a systematic treatise divided into ten books, which was designed to embody everything with which it was necessary for the medical practitioner to be acquainted. In the middle ages it was a popular text-book, and went through many editions.

To the tenth century belongs Hali Abbas, Ali-Ben-El-Abbas, or Alaeddin-al-Matjousi, who is known as the author of the "*Almaleri*," or *Opus regium*, dedicated to Adhab-doulat, Emir of Bagdad. It was highly esteemed until driven out of the field by Avicenna's "*Canon*." In its pages its author treats, with a good deal of independent reflection

and practical knowledge, of the laws of dietetics, the preservation of health in different climates, the action of the gastric juice, the formation of biliary calculi, and the advantage of studying disease in hospitals. He strongly advises the use of mineral waters.

But the most celebrated of the Arabian physicians and philosophers is AVICENNA, more properly called Abu-Ali-Al-Hosein Ibn Abdullah, the Ibn Sina of the Moslem, whom Dante thought worthy of an equal place in "the sapient throng" with the master-minds of antiquity:—

"Orpheus I marked,
And Linus, Tully, and moral Seneca,
Euclid and Ptolemy, Hippocrates,
Galenus, Avicen."—(*Inf.* iv. 137–140).

"He was a man," says Scheffer, "of the highest intellect, a great philosopher, an admirable physician, and the best theologian of his race." Chaucer, in the Prologue to the *Canterbury Tales*, represents his Doctor of Physic as knowing well

"Serapion, Rhazes, and Avicen."

He was born at Afschana, in Bokhara, in August, 980. His genius ripened early, for such was his precociousness that by the age of sixteen he had mastered all the sciences, and gained a wide reputation as a physician. His fortunate cure of the Emir, Nouk Ibn Mansur, of a serious malady, made him a favourite at court, and he was permitted access to the treasures of the royal library, the destruction of which was afterwards imputed to him. Having dived deep into the learning of the past, he went on his travels, to see what could be acquired by personal observation and inquiry. After visiting the districts and cities near the Caspian, he settled for a time at Djordan, where he wrote his great work, the

Canun fi el Thebb, or "Canon of Medicine." This elaborate treatise became the standard authority of the schools, and enjoyed its influence unimpaired, until the revival of letters at the close of the fifteenth century, when the original Greek authors came again into vogue.

Removing to Hamerdan in consequence of the unsettled condition of the Caspian regions, he was made vizier by the Emir Schems-Eddaula, and received command of the army. But a conviction had been growing that Avicenna did not believe in the faith of the true Islam; the troops mutinied, and but for the intervention of the prince would have slain him. The storm, however, subsided, and then he returned to court, devoting his leisure to the composition of the most masterly of his compositions, the "Al-Schefa."

In his manner of life Avicenna may have served as the prototype of those remarkable men of genius—who talk brilliantly and work laboriously all day, though they abandon the night to the wildest dissipation—with whom some modern novelists have made us familiar. For it was thus that he alternated between intellectual toil and sensual pleasure. His unsettled habits, and the jealousy of his fellow-practitioners, were incessantly involving him in difficulties. After the death of Schems-Eddaula, he was accused of treason, and thrown into prison; but he contrived to escape, and took refuge at the court of Ispahan. There he resumed his irregularities, and there, his constitution breaking down under the stress and strain he put upon it, he died, in July, 1037, at the comparatively early age of fifty-seven. To him might fitly have been addressed those memorable words, "Physician, heal thyself!" for in his life, both physically and morally, he violated all the laws which he laid down with such luminous eloquence in his writings. His intellectual vigour was far beyond that of any of his contemporaries. There was not a science with which he was unacquainted;—not a science which he did not do

something to advance. *Nullum tetigit quod non ornavit.* Of his hundred or more works none are trivial; while some reveal a truly wonderful degree of strength and perspicacity. His fever-fits of dissipation did not prevent him from pondering deeply those two great metaphysical problems, the nature of Being and the existence of the Soul; nor from endeavouring to form and define an intelligent conception of God as the Supreme First Cause, which, however, acts only in a sphere that surrounds all things, inferior spheres deriving their activity from this vast superior sphere. How fatally his practice was in opposition to his aspiration—how the lusts of the flesh dragged down a mind that could cherish the loftiest ideals, the following passages from his “*Al Schefa*” will show: “As to the rational soul, its true perfection consists in becoming an intellectual world, in which one may find the form of all that exists, the rational order that prevails everywhere, the good that penetrates all things. . . . There are men of nature most pure, whose souls are strengthened by their purity and their unchangeable attachment to intellectual life—these men in every act receive the aid of the supernal intellect. Others have no need even of study to attain to that communion: they know, of themselves; they are inspired.” But all this high thinking was forgotten in the glow of the wine cup and the smile on the lip of beauty.

Another famous, though less famous, Arab physician was AVENZOAR—that is, Abou-Menvan-ben-Abdel-Malek-ben-Zoar—who was born at Peñaflor, near Seville, during the latter half of the twelfth century. He came of a family which had long practised the Art of Healing, and received his first teaching from his father. Though he burned the midnight oil over the writings of his predecessors, he refused to yield to them a servile allegiance. He observed and thought for himself, and pursued throughout his long and tranquil career—in

every respect the antithesis to that of Avicenna—his well-considered experiments. “I was extremely anxious,” he says, “to ascertain for myself the composition of every kind of medicament.” The results of his inquiries are given in his treatise, entitled “Thaissa,” on remedies and regimen. He was an inflexible Mohammedan; and when touching upon the disease of the stone, he hastens from it as indelicate, and denounces the operation of extraction as impious, because it necessitates the exposure of an unclean part of the body, too unclean for the eyes of the believer.

His success as a physician procured him an invitation from the Emir of Morocco, who formally attached him to his household, and gave him his entire confidence until his death in 1262. He was then about ninety-two years old; the statement that he lived to the age of one hundred and thirty is certainly fictitious.

The reader who would wish to understand the place of AVERROËS in philosophy, and his relation to the great Stagyrte, the character of his system and the extent of his influence, is referred to Renan’s fascinating *Essai Historique*, entitled “Averroës et l’Averroësme” (1861). In our humbler pages he finds his place as a physician, but it was not as a physician that he made himself a name for all ages. There is little, however, to be told respecting his life—of which, indeed, we know little more than that he practised medicine at Cordova with success. He was held in the highest respect by the Emir Yussuf, his introduction to whom he graphically describes:—“When I appeared before the Commander of the Faithful, I found him alone with Ibn-Tofaïl. The latter spoke highly of me, boasting of my nobility, and of the antiquity of my family. As to this point, indeed, he somewhat exaggerated; at least, he mentioned circumstances of which I was quite ignorant. After certain formal conversation, the Emir asked me, ‘What

is the opinion of philosophers concerning Heaven? Is it an eternal *substance*, or a new and recent *accident*?' I was afraid and stunned, and for the moment could not answer. The Emir understood my confusion, and turned to Ibn-Tofaîl, who thereupon discussed what Plato and Aristotle said on the subject, repeating also with wonderful grasp of memory all that the Moslem theologians had argued against the philosophers. The Emir having thus put me at ease, led me to converse in my turn. As I retired, I was presented with a purse and a cloak of great value."

It was at the request of Yussuf that Averroës undertook the great labour of his life, the Commentary on Aristotle.

The true name of this celebrated philosopher was Aboul-Walid Mohammed Ibn-Ahmed Ibn Roshd. The Spaniards abbreviated it into Aven Roshid, which, by a gradual process of corruption, has been transformed into Averroës.

Averroës was born at Cordova about 1120, and died in 1198.

The last of the Arabian physicians whom we shall briefly notice is Albucasis, Abulcasis Buchasis, celebrated for his skill in surgery. He was born at Azzahra in Spain, and died at Cordova in 1107. His work, "Al-Tassrif," contains an interesting description of the surgical instruments then in use, and a vigorous statement of the importance to practitioners of an accurate knowledge of surgery.

We may add, before passing to another branch of our subject, that it was the Arab physicians who introduced the practice of writing prescriptions when they were called in to attend a patient, and first employed apothecaries to make them up.

CHAPTER III.

FURTHER DEVELOPMENTS OF MEDICAL SCIENCE.

MEDIÆVAL PHYSICIANS.

WITH the decay of the Saracenic power in Spain, its universities and medical schools decayed, until, at length, the Art of Healing was confined to Italy, where the school of Salerno acquired and maintained a considerable reputation. In Europe generally, however, no Christian physician of any celebrity appeared for five hundred years; and in most countries the practice of the Healing Art was undertaken by ecclesiastics or by quacks, whose sole qualification was their audacity. In our own country, after the introduction of Christianity, the clergy assumed the profession of medicine, administering some old and well-known remedies with a good deal of superstitious ceremonial, which, perhaps, had a greater effect upon the patient than the nostrums themselves. It is said that Alfred the Great, whose far-seeing sagacity lost sight of nothing that concerned the welfare of his people, caused several medicinal works to be translated into English; and in succeeding reigns his example was followed, much to the public advantage, until the invasion of the Danes extinguished in blood and fire the young and feeble growths of science.

The school of Salerno—a city famous for the probity of its men and the beauty of its women—was established by the Benedictine monks in the seventh century for the purpose of teaching the Art of Healing in Hebrew, Greek, Arabic, and Latin. It made but small progress, however, until Salerno fell into the hands of the Normans, when Constantine, an African Christian, after a pilgrimage of thirty-nine years, returned

from the East with the language and learning of the Arabians, and began to teach the practice and the lessons of Avicenna.* In the eleventh century its popularity was spread throughout Christendom—patients flocked to it from every country. It was the first school which granted diplomas to candidates after they had passed through the prescribed curriculum, and had undergone an examination as a necessary qualification to practise—a regulation instituted by Frederick II. of Naples, in order to protect his subjects from the impositions of the quacks. It was at the same time decreed that no surgeon should undertake a surgical operation unless he had acquired a knowledge of anatomy; and, to assist students in the acquisition of that knowledge, a professorship of anatomy was established, provision being made for a demonstration of the structure of the body once in every five years. Thus, we may infer, that in the twelfth century a tripartite division of the profession had obtained, and that physicians, surgeons, and apothecaries had each their distinct department.

Salerno was specially distinguished by its female students, the names of five of whom have been preserved—Abella, Mercuriades, Rebecca, Trotta, and Constantia Calenda; the last, in her time, acquiring a world-wide reputation. It had, also, its royal students, such as Roger, and William I., and William II., Kings of Sicily. It produced, either as the work of several hands, or, according to Haller, of a single author, John of Milan, a long series of leonine verses, or Latin rhymes, in which, under the title of "*Regimen Sanitatis Salerni*," an outline is given of its medical teaching, and of the remedial agents in use by its professors. These are dedicated to Edward the Confessor, King of England.

The mention of this saintly sovereign reminds us that the practice of "touching for the King's Evil"—that is, for scrofula—was initiated by him (1058); and was supposed to

* He also translated Hippocrates and Galen into Latin.

descend only to foreign potentates allied more or less directly with the Royal Family of England. The French kings, however, claimed the same miraculous gift, and there is no doubt that it was exercised by Philip I., though it is pretended that he was deprived of it on account of the impurity of his life. Laurentius, chief physician to Henry IV., in a fine fit of patriotic enthusiasm, asserted that it began with Clovis (A.D. 481); and some modern writers have pointed out that it was occasionally exercised by the Emperor Hadrian, by Vespasian, Soverus, and others, and by Mohammed. It was only in the Royal Family of England, however, that the power was for centuries regarded as an inalienable heritage.

William of Malmesbury, writing early in the twelfth century, relates the case of a young woman, who, having a husband of about her own age, and proving sterile, fell ill with tumours in her neck. She was commanded in a dream to apply to the king to wash them. "To court she went; and the king being at his devotions all alone, dipped his fingers in water and dabbed the woman's neck, and he had no sooner removed his hand than she found herself better, the loathsome scales dissolved, so that worms and purulent matter bursting out together, all the noxious humours disappeared, though the lips of the ulcers remained wide and offensive. She continued at court until she was well, which was in less than a week's time; the ulcers being so well closed, and the skin so fair, that nothing of her former disease could be discovered; and, within a year, she was brought to bed of twins." The chronicler adds that "a blind man spread a report at court, that he should receive his sight if he touched his eyes with the water that the king had washed his hands in; which, the king hearing of, he disclaimed any such power: but his servants, it seems, without the king's knowledge, while he was at prayers, made the experiment, and immediately after the blind man was washed with the water, he recovered his sight." "Those

who knew him more intimately aver that he often cured this complaint in Normandy : whence appears the falsity of those who in our time pretend that the cure proceeds not from personal sanctity, but from hereditary virtuo in the royal line."

The Anglo-Norman kings made no attempt to assert their prerogative of healing ; but Peter of Blois testifies to cures wrought by Henry II. John of Gaddesden, physician to Edward II., in treating of scrofula, indicates certain methods of treatment, and advises that, if these fail, the patient should repair to court to be touched by the king ; but he does not say why the patient should not be sent there first of all. Archbishop Bradwardine is a witness to the continuance of the practice in the reigns of Edward III. and Richard II. It was in vogue in those of Henry IV., Henry V., and Henry VI. Henry VII. was the first to dignify it with a regular ceremonial, and to suspend a small piece of gold round the sufferer's neck—a custom to which Shakespeare alludes—

" Strangely visited people,
All swoln and ulcerous, pitiful to the eye,
The mere despair of surgery, he cures ;
Hanging a golden stamp about their necks,
Put on with holy prayers."

William Cavendish, in his "Life of Wolsey," describes a scene at the French Court when the Cardinal was there as ambassador in 1527:—"And at the king's coming into the bishop's palace, where he intended to dine with the Lord Cardinal, there sat within a cloister about two hundred persons diseased with the King's Evil, upon their knees. And the king, or ever he went to dinner, praised every of them with rubbing and blessing them with his bare hands, being bareheaded all the while, after whom followed his almoner, distributing of money unto the diseased. And that done, he said certain prayers over them, and then washed his hands, and came up into his chamber to dinner."

The stamp of gold used by Henry VII. was an angel noble, having an angel impressed on the reverse. Queen Elizabeth substituted the rose noble of Edward III., with the royal effigies in a ship on the one side, and on the other the following inscription :—"Jesus autem transiens, per medium eorum ibat." Afterwards, gold pieces, engraved with sentences from Holy Writ, were specially coined.

In the reign of Elizabeth, William Tookes published his "Charisma, sive Donum Sanationis," in which he gives numerous instances of cures effected by the royal touch; and William Clowes, the Queen's surgeon, refers to scrofula as "the King's or the Queen's Evil, a disease repugnant to nature; which grievous malady is known to be miraculously cured and healed by the sacred hands of the Queen's most royal Majesty, even by Divine inspiration and wonderful work and power of God, above man's will, art, and expectation."*

As to James I., Mr. S. R. Gardiner tells us that on his first arrival in England, he had objected to the practice. "He had strong doubts as to the existence of the power . . . The Scotch ministers whom he had brought with him to England urged him to abandon the practice as superstitious. To his English counsellors it was a debasing of royalty to abandon the practice of his predecessors. With no very good will he consented to do as Elizabeth had done, but he first made a public declaration of his fear lest he should incur the blame of superstition. Yet as it was an ancient usage, and for the benefit of his subjects, he would try what would be the result, but only by way of prayer, in which he requested all present to join. In after years he showed less hesitancy, and Shakspeare could flatter him by telling not only how

* Fuller, in his *Church History*, relates a cure effected by the Queen upon a Papist, which converted him to the Protestant faith. The historian frankly expresses his belief in the virtue of the royal touch.

Edward had cured the sick by his touch, but how he had left 'the healing benediction' to 'the succeeding royalty.' "

No fewer than eleven proclamations on the subject—most of them fixing the time when patients might repair to the court to undergo the ceremony—were issued by Charles I. In his troubled reign he was frequently unable to give the golden medal, and was obliged to substitute silver, or to give none at all. Taylor, the water-poet, records that he touched seven patients at Newport.

Richard Wiseman, Sergeant Chirurgeon to Charles II., declares that he was an eye-witness to many hundreds of cures performed by His Majesty's touch alone, without any assistance from surgery. In twenty-one years, at a cost of £10,000 a year—that is, from 1660 to 1682—Charles II. touched as many as 92,107 sufferers.* Sometimes the ceremony was repeated thrice in a week, and as many as six hundred were touched on a single occasion. Sunday was a favourite day; and the place Whitehall. John Brown, another of the royal surgeons, describes the ceremony: The patients having been arranged in order, the King enters his royal chair uncovered. One of the chaplains present then reads the duly-appointed prayers, "the sick and deceased being kept back by the chirurgeons till the appointed time; whereafter having made their obeisances, they do bring them up to order. The chief-in-waiting delivers them one by one to the King to be touched; the which done, the other takes him or her from him." During and after each act of healing, a chaplain reads Mark xvi. 14-18, and at the close of the ceremony, John i. 1-8. Then "the chirurgeons come up a second time, making their three obeisances as formerly, when the Clerk of the Closet on his knees doth deliver to his Majesty's sacred hand his gold ready

* Of these, nearly 24,000 were touched in the first four years—that is, when loyalty was at fever height, under the influence of the Restoration. In 1682 he touched 8,500 persons.

strung upon a white silk ribbon ; and when these following words come to be read, the king puts over the gold : ' That light was the true light, which lighteneth every man which cometh into the world.' This running through the whole course of the ceremony, which words are continually repeated between every one which receives the gold. This being finished, these following words are read (St. John i. 10-14) ; and, in conclusion, a few special prayers are read, when his Majesty, having by my Lord Chamberlain, or in his absence the Vice-Chamberlain, and two nobles, brought up lincn, and the bason and ewer, to wash his hands, he takes leave of the people, and they joyfully and thankfully do return home, praying God and their good King."

The form of prayer used at the ceremony was first introduced into the Common Prayer Book in 1684.* In the previous year the King had issued a proclamation appointing fit times for the Public Healings : namely, from All-Hallow-Tide till a week before Christmas, and after Christmas until the first week of March, and then to cease until Passion Week. Each person was required to come provided with a recommendation or certificate from the minister or churchwardens of his parish, who were instructed to take care that the individual had not been touched on any previous occasion. Evelyn, in his *Diary*, under the date of March 28, 1684, records, " there was so great a concourse of people with their children to be touched for the Evil, that six or seven were crushed to death by pressing at the chirurgeon's door for tickets."

James II. continued the practice.† An advertisement in

* The University of Oxford continued to reprint the Office of Healing together with the Liturgy until some time after the accession of George I.

† Bishop Cartwright, in his *Diary*, August 27, 1687, mentions that he attended the King " in the Royal Closet, where he healed (*i.e.*, touched) 350 persons. In one of his Progresses he touched 850 persons in the Cathedral at Chester."

the *London Gazette* for October 7, 1686, announces that the King will heal weekly on Fridays, and commands the attendance of the King's physicians and surgeons at the Mews, on Thursdays in the afternoon, to examine applicants and furnish them with tickets.

William III. was "so profane" as to sneer at the ceremony, and refused to pretend to the possession of the healing influences. He had too much sense to be duped, says Macaulay, and too much honesty to bear a part in what he knew to be an imposture. "It is a silly superstition," he exclaimed, when, at the close of Lent, his palace was besieged by a crowd of sufferers: "Give the poor creatures some money, and send them away." Only on one occasion could he be persuaded to touch a patient. "God give you better health," he cried, "and more sense." Whiston tells us that this person was healed, notwithstanding William's incredulity.

It may have been—it was—"a silly superstition;" but not, as Macaulay so cavalierly pronounces it, "an imposture." There can be no reason to doubt that in many of the cases cures were really effected—not, of course, by virtue of the royal touch, but through the influence exercised on the patient's imagination, or the impression produced on his nervous system. Scrofula (from the Latin *scrofa*, a sow, that animal having been regarded as specially liable to the disease) consists of certain swellings of the lymphatic glands, which suppurate slowly and are healed with difficulty. Now it is quite possible that the process of suppuration may be expedited and increased by any course which induces a freer flow of blood to the part affected, or acts upon the nerves, and in credulous, ignorant, and sensitive persons, such a cause would be found in the excitement originating in the circumstances of the royal touch.

The last of our sovereigns who performed the ceremony was Queen Anne. Dr. Dicken, her Sergeant-surgeon,

examined all who came before her, and he has testified to some of the cures with a sincerity which cannot be misunderstood. Dr. Johnson, when a child of two years and a half old, was taken to London, by the advice of Sir John Floyer, then a Lichfield physician, and touched by the Queen, in Lent, 1712. He said, in after life, that he had a confused, but "a sort of solemn, recollection of a lady in diamonds, and a long black hood."

The Jacobites professed to believe that the power did not descend to Mary, William, or Anne, because neither of these sovereigns reigned by divine right; and Carte, the historian, to show that it had been inherited by the exiled Stuart princes, relates the case of one Christopher Lowell, who, in 1716, went to Avignon, was touched by the Pretender, and cured. And in October, 1745, during Prince Charles Edward's temporary occupation of Holyrood, though claiming only to be Prince of Wales and Regent, he touched a female child for the King's Evil, who perfectly recovered, it is said, in twenty-one days.

We have already alluded to some of the chief authorities on this curious subject; but the reader may also consult Becket's "Free and Impartial Enquiry into the Antiquity and Efficacy of Touching for the King's Evil" (1722); and William Howitt's "History of the Supernatural in All Ages and Nations" (1863).

Among the diseases which crept from the East into Europe, in the track of the returning Crusaders, was that of Leprosy, though it had previously been introduced into Italy by the soldiers of Pompey. It raged with great violence, and led to the establishment of hospitals and leper-houses for the reception of sufferers. This was the disease now known as *Lepa tuberculosa*; but the less virulent *Lepra*, or *Elephantiasis Arabum*, must have been imported into Europe about the same time.

The twelfth century, which was, perhaps, the most prosperous period of the School of Salerno, witnessed the foundation by Frederick III. of similar Medical Schools at Bologna, Messina, Montpellier,* and Naples. In 1139, Pope Innocent II., alarmed at the extent to which the practice of medicine was carried by ecclesiastics, to the neglect of their more sacred duties, called a Council (the Second Lateran), which prohibited the practice, and ordered greater attention to theological studies. As the decree proved ineffective, Alexander III. convened a Council at Tours, in 1270, which decreed excommunication as a punishment for the disobedient. This edict also became a *brutum fulmen*, and eventually an arrangement was sanctioned, which allowed the clergy to prescribe and administer medicine, but forbade them the practice of surgery.

In the thirteenth century were founded the Medical Schools of Valencia, Paris, Toulouse, Prague, and Vienna—all developing into, or forming part of, Universities; of which that of Paris quickly took the lead, attracting so extensive a patronage that the students were said to outnumber the inhabitants of the city. Soon afterwards sprang up a branch of the profession combining both medicine and surgery, whose members styled themselves Médecin-Chirurgiens. Among them may be mentioned Botal, Le Febvre, Rousset, Le Geay, D'Amboise, Petit, and Jean Pitard, the last of whom, as surgeon-in-chief to St. Louis, was instrumental in the establishment of a College of Surgery.

England furnishes only a few illustrious names at this period, as, for example, the able and erudite Benedictine monk, Adelard of Bath, who traversed Spain, Egypt, and Arabia, attracted by the light of Science; compiled and translated several works on physics and medicine; and, about 1130, translated from the Arabic into Latin Euclid's Elements and a

* Famous for its botanical garden, the first of its kind.

Treatise on Astronomy. Some of his MSS. are still preserved in the Bodleian Library.* It is pleasant to read of these laborious and enthusiastic scholars, who, in an age when the intellectual life of the nation flickered faintly and uncertainly, made efforts so energetic and so self-denying to advance the cause of knowledge.

John Giles, or Joannes Ægidius, was a native of St. Albans. He was educated at Paris, and studied with such success that while still a young man he was appointed Professor of Medicine. He afterwards held the same appointment in the University of Montpellier. Later in life, he took the degree of Doctor of Divinity, and was the first Englishman who entered the Dominican order. He became celebrated both as physician and preacher, and it was to him that Bishop Grostête, the large-hearted and large-minded, sent for physical and spiritual counsel in his last illness. He died in 1233.

Hugo Atratus, or Hugh of Evesham, or Hugh Black, was born at Evesham, in Worcestershire, studied at Oxford, travelled in France and Italy, and gained a great reputation as divine, astronomer and physician. In 1281, Pope Martin II. created him a Cardinal of S. Laurence in Lucina, and six years later he fell a victim to the plague.

The ordinary practitioners of the period are sketched incisively by John of Salisbury:—"They are abundantly communicative," he says; "they will tell you all they know,

* Through the courtesy of the Bodleian librarian we are enabled to give the titles of these MSS.:—"Adelardi Bathoniensis et Nepotiae Dialogus, ubi docetur stellas esse animatas" (*Digby*, 11). "Isagoge minor Japharis Mathematici in Astronomiam, per Adelardum Bathoniensem ex Arabico sumpta" (*Digby*, 68). "Euclidis Elementorum libri xv. ex versione Adelardi de Arabico, unà cum Commento Magistri Campani Novariensis" (*Arch. Seld.* B. 13). "Euclidis Elementa, eum Scholiis et Diagrammatis, Latine reddita, per Adelardum Bathoniensem" (*Auct.*, F. 5. 28). "Ezech Elkamesoni, i.e., Tabulæ Chamaresmica per Ethelardum Bathoniensem ex Arabico traductæ" (*Auct.*, F. i. 9).

and it may be, in their great kindness, a little more. From them you may learn the nature of everything, the causes of health and sickness, how you may keep off the one and preserve the other ; so that they can do both at pleasure. They will minutely explain to you the origin, the critical stage, the progress, and the cure of all diseases. In a word, when I hear them talk, I am delighted. I think them not inferior to Mercury or Æsculapius, and almost persuade myself that they can raise the dead. Only one thing makes me hesitate ; their theories are as directly opposed to one another as light and darkness. When I reflect on this, I am somewhat perplexed. Two contradictory propositions cannot both be true. But what shall I say of the practical physicians ? They soon return from college, full of unsubstantial theories, to practise what they have learned. Galen and Hippocrates are continually in their mouths. They speak aphorisms on every subject, and make their hearers stare at their long, unknown, and high-sounding words. The good people believe that they can do everything, because they pretend to everything. They have but two maxims which they implicitly carry out : Never bother about the poor ; Never refuse money from the wealthy."

ROGER BACON'S claim to a niche in the annals of Medicine must be based upon generalities. He was virtually the founder of experimental philosophy, enunciating the principles on which physical investigation may satisfactorily be conducted. Speaking of Science, he says, in language far in advance of his time :—"There are two modes of knowing, by argument and by experiment. Argument concludes a question, but it does not make us feel certain, or acquiesce in the contemplation of truth, except the truth be proved and confirmed by experience." He attributed these distinctions to experimental science :—"First, she tests by experiment the noblest conclusions of all other sciences. Next, she discovers,

respecting the ideas which other sciences deal with, magnificent truths to which those sciences unaided can by no means attain. Her third dignity is, that by her own power, and without reference to other sciences, she investigates the secrets of Nature."

Bacon was born at Ilchester, in Somersetshire, in 1214; he died in 1292. His studies were first pursued at Oxford, and afterwards at Paris, where he graduated doctor in theology. Returning to England, he entered the Franciscan order, and devoted himself to the acquisition of Latin, Greek, Hebrew and Arabic. But his best energies were given to the natural sciences, of which he obtained such a mastery as to justify the title of "The Admirable Doctor," bestowed upon him by his contemporaries. His experiments, however, led to a suspicion that he was addicted to magic and sorcery; a suspicion confirmed (it is said) by a brazen head, kept in his study, with which he was alleged to hold converse on things human and divine. He was imprisoned by order of Pope Innocent IV.; set free by Pope Clement IV., to whom he dedicated his "Opus Majus"; again imprisoned by Pope Nicholas III., and liberated eight years before his death.

That Bacon was acquainted with the magnifying glass is well known. He seems also to have understood the composition of gunpowder; and in his "Treatise on the Secret Works of Nature and Art, and the Nullity of Magic," he shadows forth the modern inventions of balloons, the diving-bell, suspension bridges, and even steam travelling. Yet his strong, clear intellect was not wholly exempt from the superstition of the age. He could not dismiss the illusions of astrology and alchemy. He believed that the stars exercised an influence on various parts of the human body, and that the mind was thus stimulated to particular acts, without any relaxation of or interference with free-will. And in his "Mirror of Alchemy" he asserts that Nature, in the formation of metallic veins, tends constantly to

the production of gold, but is impeded by various accidents, and in this way creates metals which contain impure matters mingled with the fundamental body.

Gilbertus Anglicus, or Gilbertus Leglæus, merits notice as the First English Surgeon whose name has been handed down to us. He belongs to the thirteenth century. He was one of the earliest English writers on Medicine; but his works—of which the best known is the "*Compendium Medicinæ, tum Morborum Universalium, quam particularium*"—were principally compiled from Rhazes and other Arabians. The "*Compendium*" was printed at Lyons in 1510, and again at Geneva in 1603, under the title of "*Laurea Anglicana*." Leland highly commends this author's surgical skill. He was strongly imbued, however, with the wearisome philosophy of the schoolmen, and followed Peter the Lombard in all his unprofitable subtleties and splitting of hairs.

The principal foreign contemporaries of Bacon and Gilbert now call for notice:—

Pietro de Abano, or Petrus Abonus, belonged to the University of Padua, where he taught the science with success, and indulged himself in philosophical speculations as a devoted follower of Averroës. In his medical practice astrology played an important part; and whenever Jupiter crossed the meridian, he was wont to turn himself towards it, and pray for good fortune to attend his enterprises. His supposed skill in this branch of human folly marked him to the vulgar eye as a dealer in the Black Art; and he narrowly escaped the fangs of the Inquisition. Freher describes him as "*theologus, medicus, astrologus, et philosophus*." He was not philosopher enough, however, to despise money. His fee for visiting a patient "out of town" was never less than 50 crowns; and when summoned to attend Pope Honorius IV., he stipulated for the handsome honorarium of 400 crowns a day.

Here we may interject a few interesting particulars respecting the payment of medical men. It has always been assumed that the physician makes no direct charge—though this can hardly be said of doctors now-a-days—but graciously condescends to accept his patient's grateful offering for services gratuitously rendered. For this assumption Dr. Doran pleads a religious reason:—"Amongst the Christian martyrs," he says, "were reckoned the two Eastern brothers, Damian and Cosmas. They practised as physicians in Cilicia, and they were the first mortal practitioners who refused to take recompense for their work. Hence they were called *Awar-gyri*, or 'without money.' All physicians are pleasantly supposed to follow this example. They never take fees, like Damian and Cosmas; but they meekly receive what they know will be given out of Christian humility, and with a certain or uncertain reluctance, which is the nearest approach that can be made in these times to the two brothers who were in partnership at Egea, in Cilicia."

Enormous fees have, in all ages, been paid to successful practitioners, from the 60,000 crowns which King Seleucus paid to Erasistratus, to the one thousand guineas recently paid to a distinguished London physician by a noble lady who had summoned him to attend her in the Riviera. When Dr. King bled Charles II. in an apoplectic fit, and, for the time, saved his life (February 2nd, 1685), the Privy Council ordered him almost as large a payment, namely, £1000. Sir Astley Cooper, it is said, on one occasion received a thousand guineas. A wealthy West Indian, named Hyatt, was compelled to undergo a painful and dangerous operation. Drs. Lettsom and Nelson attended as physicians; Sir Astley as operator. The success of the treatment was complete, and the grateful patient handed to each of his physicians a cheque for three hundred guineas. "As for you, sir," he said to Sir Astley, "you shall have something better. Take *that!*" and he threw his

nightcap at him. "Sir," said Sir Astley, "I'll pocket the affront," which he might well do, as the cap was lined with a draft for one thousand guineas.

Dr. Dimsdale, of Hertford, who visited St. Petersburg, in 1768, to inoculate the Empress Catherine and her son Paul, was rewarded with a fee of £12,000, a life-pension of £500 per annum, and the rank of Baron. This imperial generosity—to use the slang of the day—"beats the record." Dr. Willis, for his services to George III., received only £1500 a year, but a pension of £650 was settled on his son.

When the regulation fee of "one guinea" was introduced, we are unable to determine. In the "*Levamen Infirmi*," published in 1700, medical fees are put forward as follows:—"To a graduate in physick, his due is about ten shillings, though he commonly expects or demands twenty. Those that are only licensed physicians, their due is no more than six shillings and eightpence, though they commonly demand ten shillings. A surgeon's fee is twelvepence a mile, be his journey far or near; ten groats to set a bone broke, or out of joint; and for letting blood one shilling; the cutting off or amputation of any limb is five pounds, but there is no settled price for the cure."

Hallam justly observes that in the science of Anatomy an epoch was made by the treatise of Mundinus (Rimondino or Mondino), professor in the University of Bologna, entitled, "*Anatome Omnium Humani Corporis Interiorum Membrorum*."* It possessed this advantage over the works of Galen, that it was founded on the actual anatomy of the human body. For if Galen dissected only apes, he could judge of mankind merely from analogy; at all events, he unquestionably had little practice in human dissection. The treatise of Mondino

* The first anatomical work which, after the invention of Printing, was illustrated by wood engravings.

was accepted as the text-book of the Italian Universities until about the middle of the sixteenth century. The statutes of the University of Padua required anatomical lecturers to adhere to it *literatim et verbatim*. It became the custom in the Universities for one or two human subjects to be opened every year; the work of dissection being performed by a barber or a barber-surgeon, while the several organs were demonstrated and described from Mondino's work by the professor.

Mondino died about 1326.

Another illustrious name in the medical annals of the fourteenth century is that of Guy de Chauliac or Chaulicu, who studied at Paris and Bologna, practised for some years at Lyons, and then removed to Avignon, where, as physician, he successively attended upon Popes Clement VI., Innocent VI., and Urban V. It was at Avignon that he compiled his celebrated work on surgery—which induced Fallopius to speak of him as the first legislator in surgery—"Inventorium sive Collectorium partis Chirurgicalis Medicinæ." For several centuries it held the field as a text-book. Chaulieu has left a graphic description of the Plague, which visited Avignon in 1343. When his fellow-physicians fled from the infected city he bravely stood to his post, and gave such assistance as the then condition of medical science rendered possible; he himself was attacked by the epidemic, but recovered. The influence still exercised by the follies of astrology is apparent in the fact that this admirable scholar attributed the outbreak of the disease to the conjunction of the three great planets, Saturn, Jupiter, and Mars, in the sign Aquarius, on the 24th of March, 1343.

His contemporary in England was John of Gaddesden, or Gatesden, Prebend of St. Paul's, professor of medicine at Merton College, Oxford, and the first Englishman who held the post of Court Physician, in which capacity he attended

both Edward II. and Edward III. He died about 1350. He was the author of the "*Rosa Anglica*," which contains much interesting information concerning the state of Medical Science in his time, with a tolerably large admixture of superstitious practices and vulgar errors.

The fourteenth century was marked by the invention of gunpowder, or rather its employment in warfare, and by visitations of the Plague and the Black Death. Against these pestilences Medical Science was virtually powerless; but something was done for the relief of humanity by the erection of isolated houses, called Lazarettos, for the reception of sufferers. Upon the subject of these Epidemics we shall speak in a separate chapter.

The English physician of the fourteenth century has been drawn by Chaucer with his customary sharpness of touch:—

"With us there was a doctor of physike,
In all this worlde ne was ther non him lyk,
To speke of physik and of surgerye;
For he was groundud in astronomye.
He kepte his pacient a ful gret del (or, wondurly wel)
In homys by his magyk naturel;
Wel coude he fortunen the ascendent
Of hys images for his pacient.
He knew the cause of every maladye,
Were it colde or hete or moist or drye,
Where they engendered, and of what humour;
He was a verrey parfyte practysour.
The cause yknowe, and of his harm the roote,
Anon ye yaf* to the syke man his botc.
Ful redy hadde he his apotecaries
To send him druggis and his letuaries,†
For eche of him made othur for to wyne;
Here ‡ frindschipe was not newè to begynne.
Wel knew he the olde Esculapius,
And Dioseorides and ecke Rufus;

* Gave.

† Lectuaries.

‡ Their.

Old Ypocras, Haly, and Galen ;
 Serapion, Razis, and Avyccen ;
 Averrois, Damascon, and Constantyn ;
 Bernard, and Gatisden, and Gilbertyn.
 Of his diete mesurable was he,
 For it was of no superfluité,
 But of gret norisching and digestible.
 His studie was but litel on the Bible.
 In sangwyn and in perse* he clad was al
 Lynced with taffata and with sandal.
 And yet he was but coy in dispencc ;
 He kepté that he wan in pestilence.
 For gold in physik is a cordial ;
 Therefore he lovede gold in special."

Chaucer's description is not very flattering. The English physician of the fourteenth century, according to the poet, was a man addicted to astrology and magic ; glib of speech ; with abundant assurance ; in league with the apothecary to make the most out of his patients ; indifferent in religious matters ; avaricious to acquire, and eager to keep.

It was during the fourteenth century that Apothecaries were incorporated with Grocers; and from Chaucer's reference, one would suppose that they were more common in England than our medical historians generally allow. It is said that, in 1345, Edward III. bestowed a pension of sixpence a day upon Comus de Gangeland, *Apothecarius Londinii*, for attending upon him during his illness in Scotland.

[In 1511, an Act of Parliament, 3 Hen. VIII., c. 11, was passed for regulating the admission of persons practising physic or surgery, but no mention occurs therein of this third division of the great fraternity. In 1543, however, the Act known as 34 & 35 Hen. VIII., c. 8, as a remedy for the ignorance and greed of the London surgeons, tolerates and protects the irregular practitioners, afterwards known as Apothecaries. It sets forth that tho aforesaid surgeons had

* Sky-coloured ; a bluish grey.

“sued, troubled, and vexed divers honest persons, as well men as women, whom God had endued with the knowledge of the nature, kind, and operation of certain herbs, roots, and waters, and the using and ministering of them to such as had been pained with customable diseases, as women’s breasts being sore, a pin and the web in the eye, uncomes of hands, burnings, scaldings, sore mouths, the stone, strangury, saucelim, and morphew, and such other like diseases; and yet the said persons have not taken anything for their pains or cunning, but have ministered the same to poor people only, for neighbourhood and God’s sake, and of pity and charity;” and therefore it ordains “that at all time from henceforth it shall be lawful to every person being the king’s subject, having knowledge and experience of the nature of herbs, roots, and waters, or of the operation of the same, by speculation or practice, within any part of the realm of England, or within any other the king’s dominions, to practise, use, and minister in and to any outward sore, uncome, wound, apostemation, outward swelling, or disease, any herb or herbs, ointments, baths, pultess, and emplaisters, according to their cunning, experience, and knowledge, in any of the diseases, sores, and maladies beforesaid, and all other like to the same, or drinks for the stone, strangury, or agues, without suit, vexation, trouble, penalty, or loss of their goods.”

It was long, however, before the apothecary attained a recognized social status. He was a mere vendor of drugs and compounder of prescriptions; he had no special training, and little knowledge except that which he acquired by experience. We can judge from the figure he makes in the plays of Shakespeare, that he was held in small estimation by the public, and the rules and regulations which William Bulleyn laid down for his guidance permit of a similar inference. They shall be copied here:—

"THE APOTICARYE.

"1. Must first serve God, foresee the end, be cleanly, pity the poor.

"2. Must not be suborned for money to hurt mankind.

"3. His place of dwelling and shop to be cleanly, to please the senses withal.

"4. His garden must be at hand with plenty of herbs, seeds, and roots.

"5. To sow, set, plant, gather, preserve, and keep them in due time.

"6. To read Dioscorides, to know the nature of plants and herbs.

"7. To invent medicines, to choose by colour, taste, odour, figure, etc.

"8. To have his mortars, stills, pots, filters, glasses, boxes, clean and sweet.

"9. To have charcoals at hand, to make decoctions, syrups, etc.

"10. To keep his clean ware close, and cast away the baggage.

"11. To have two places in his shop—one most clean for the physic, and a baser place for the chirurgic stuff.

"12. That he neither increase nor diminish the physician's bill [*i.e.*, prescription], and keep it for his own discharge.

"13. That he neither buy nor sell rotten drugs.

"14. That he peruse often his wares, that they corrupt not.

"15. That he put not in *quid pro quo* [one drug for another, in making up prescriptions], without advisement.

"16. That he may open well a vein for to help pleurisy.

"17. That he meddle only in his vocation.

"18. That he delight to read Nicolaus Myrepsus, Valerius Cordus, Johannes Placaton, tho Lubri, etc.

“19. That he do remember his office is only to be the physician’s cook.

“20. That he use true measure and weight.*

“21. To remember his end and the judgment of God; and thus do I commend him to God, if he be not covetous or crafty, seeking his own lucre before other men’s help, succour, and comfort.”

In 1608, James I. granted a charter, by which “all and singular the Freemen of the Mystery of Grocers and Apothecaries of the City of London” were constituted a body corporate and politic by the name of the “Warden and Commonalty of the Mystery of Grocers of the City of London.” But, in 1617, acting under the advice of Sir Theodore Mayerne and Dr. Atkins, he issued another charter, by which the Apothecaries were formed into a distinct Company, under the control of the College of Physicians.]

Our historical *résumé* now brings us to the fifteenth century, during which period plastic surgery was first practised by Vincent Vianeus; the *Materia Medica* enlarged by American products; Anatomical Plates first published by Peiligg; the University and Medical School of Aberdeen instituted by Pope Alexander VI.; and, on the Continent, the following Universities were founded and endowed:—Louvain, Erfurt, Leipzig, Ingolstadt, Tubingen, and Upsal. In this century the hooping, or whooping, cough first appeared in France as an epidemic—that is, in 1414. It assumed an infectious form, and spared neither age nor sex. In 1510 it was again confined to France; in 1555 it extended to Germany; and in 1580 it spread its ravages over all Europe. Very severe outbreaks of pleurisy also occurred; and as a remedy, Pierre Brissot advocated and published the derivative system of treatment, by

* The Apothecaries’ tables of weights and measures then in vogue are still used by our chemists and druggists.

which blood was drawn from the immediate neighbourhood of the part affected, in opposition to the revulsive, which took blood at a distant part—as, for instance, in the right arm if the left side were attacked. Brissot's arguments were expounded and enforced by Lucius of Eboræ, in his "*Apologetica Disceptatio de Venâ secunda in Pleuritide.*" On the other side appeared the Venetian physician, Victor Trincavelli, with his celebrated work, "*Concilia Medica.*" In 1485 England was visited by an epidemic disorder of a new type, the Sweating Sickness, of which we shall speak hereafter. Syphilis, another dreadful pestilence, established itself in Europe towards the end of this century, when it was known as the Gallic Disease. The first to describe it was Nicholas Leonicens, in 1497 (in his "*De Epidemiâ quam Itali Morbum Gallicum, Galli verò Neapolitanum vocant.*") Leonard Fuchs, the Lutheran, says it was imported from America in 1493. "One thing is remarkable," says Dr. Friend; "the Spaniards, upon their first expedition to America, brought home from thence this contagious disorder, and soon after carried another of equal infection thither, the small-pox, of which the Indian prince, Montezuma, died."

The principal English physician of this century was Master John Phrear, or Frey, who was educated at Oxford, and admitted to the degree of M.D. by the University of Padua. He practised in Italy, and acquired a considerable fortune. A scholar and a poet, as well as a physician, he held high rank among the learned men of his day; was requested by the Italians to compose a new Latin epitaph for the tomb of Petrarch; and executed a translation of Diodorus Siculus, which he dedicated to Pope Paul II. The Pope, in acknowledgment of the compliment, nominated him to the bishopric of Bath and Wells; but on the day before that which had been fixed for his consecration, he was poisoned by a disappointed rival (1464).

CHAPTER IV.

THE SIXTEENTH CENTURY—ENGLISH PHYSICIANS.

THOMAS LINACRE, 1460–1524.

THE first really eminent name in the Annals of Medicine in England is that of THOMAS LINACRE—one of the small band of enthusiastic scholars who, in the latter years of the fifteenth century and the early years of the sixteenth, laid the foundations of English literature, and communicated a more or less direct impulse to the study of art and science.

Thomas Linacre was born at Canterbury in or about 1460. He was educated at the school adjoining Christ Church, in the old Kentish city, under William de Selling, an eminent school-master, afterwards Prior of Christ Church. Thence he proceeded for awhile to Cambridge*; afterwards, in 1480, removing to Oxford, where, in 1484, he was elected a Fellow of All Souls' College. When De Selling was sent by Henry VII. on an embassy to Rome, he was accompanied by Linacre, who resided for some time in Italy, extending his knowledge of medicine and his acquaintance with the great classic writers, and visiting Florence, Bologna, Venice, and Padua. At Florence he enjoyed the friendship of Lorenzo de Medicis, justly surnamed "the Magnificent," who permitted him to share with his sons the teaching of Angelo Poliziano. Under Demetrius Chalcondylus he learned Greek; and a natural bias disposing him to the practice of medicine and natural science, he applied himself with fervour to the study of Galen and

* COOPER, *Athenæ Cantabrigienses* (1858).

Aristotle. It is said that he was the first Englishman who read those authors in their original tongue.

Having previously graduated at Padua, with more than usual applause, he returned to England, was incorporated M.D. at Oxford, delivered lectures there upon physic, and taught Greek in the University. So great was his reputation for scholarship and knowledge of medicine, that Henry VII. selected him as tutor and physician to his son, Prince Arthur, and on his death, appointed him to instruct the Princess Catharine in Italian. He was afterwards physician to Henry VIII. Discouraging the empirical practices which the Arabian doctors had introduced into Europe, he employed his wealth in furtherance of the best interests of his profession, founding two lectures on physics at Merton College, Oxford, and one in St. John's College, Cambridge. But he did more towards the accomplishment of his great object—"to rescue the Art of Healing from mischievous ignorance, and to guide the industrious student in the path of real knowledge"—by the institution of the Royal College of Physicians in London, in 1518. Supported by the representations of his fellow-practitioners, John Chamber, Fernandus de Victoria, Nicholas Halswell, John Francis, and Robert Yaxley, and by the favour and interest of Cardinal Wolsey, he obtained from Henry VIII. a grant of letters patent, constituting "a corporate body of regular-bred physicians" in London, who should possess the sole right of admitting persons to practice within the city and a circuit of seven miles around it; and of licensing practitioners throughout the kingdom, except such as were graduates of Oxford and Cambridge.

This was an important reform. It took the practice of physic out of the hands of the priesthood; and, also, in the words of the charter of the College, from the "great multitude of ignorant persons, of whom the greater part had no insight into physic, nor in any other kind of learning; some could

not even read the letters on the book, so far forth that common artificers, as smiths, weavers, and women, boldly and accustomedly took upon them great cures, to the high displeasure of God, great infamy of the faculty, and the grievous hurt, damage, and destruction of many of the king's liege people." Thenceforth there grew up a distinct profession, whose members were compelled to undergo some kind of preparation for their important duties; and if quacks and empirics still abounded, it was the fault of a credulous public, who had ample means of detecting the invalidity of their claims. The detection was sometimes made, and followed up with a swift and severe punishment, as recorded by Stow in his *Chronicles*:—"A counterfeit doctor," he says, "was set on horseback, his face to the horse's tail, the same tail in his hand as a bridle, a collar of jordans about his neck, a whetstone on his breast, and so led through the City of London, with ringing of basins, and banished. Such deceivers, no doubt, are many; who, being never trained up in reading or practice of physick and chirurgery, do boast to doo great cures, especially upon women, so as to make them straight that before were crooked, curved, or cramped in any part of their bodies, etc. But the contrary is true: for some have received gold, when they have better deserved the whetstone."

Of the College of which he was virtually the founder, Linacre became the first President, and continued in the office until his death. Its meetings were held at his private house, in Knight Riders' Street, Doctors' Commons, which he bequeathed to the College, and it long continued to be its headquarters. Towards the end of his life, the great physician suffered much from that painful disease, the stone, and, desiring a safe retreat from the cares of a laborious profession, he entered into holy orders, and was made rector of Wigan, in Lancashire. Adapting his studies to his new character, he

began to read the New Testament ; and it is said that, after carefully perusing those chapters in St. Matthew's Gospel which record Christ's Sermon on the Mount, he threw the book from him, with, no doubt, a simulated indignation, exclaiming, "Either this is not the Gospel, or we are not Christians"—a dilemma which sometimes forces itself upon the thoughtful mind, even in the eighth decade of the nineteenth century.

A warm friendship existed between Linacre and Erasmus ; and the famous Dutch scholar, in his letters, bears frequent and cordial testimony to the character and capacity of him whom he fervently styles "his Linacre, his dear friend, his preceptor, and his patron." Writing to him from Paris, in 1506, after his return from England, he tells him how severely he suffered in his passage of the Channel, which had occupied four days ; that he had caught cold, that his head ached, that the glands behind his ears were swollen, that his temples throbbed, and he laments that "no Linacre was at hand to restore him to health by his skilful advice." In another letter, on a different occasion, he writes for a prescription which Linacre had given him in London, but his foolish servant had carelessly lost. And, again, in a letter to a correspondent, he gives a minute account of Linacre's mode of treatment when he had experienced an attack of gravel. Linacre, he says, sent for an apothecary, and caused him in his presence to prepare the following fermentation:—Camomile flowers and parsley were tied up in a linen cloth, and boiled in a vessel of pure water till the vessel was half empty. The cloth was then wrung out, and applied hot to the afflicted part until relief was procured. A warm bath would have been a speedier, and a not less effective remedy, but the infusion of the herbs was in accordance with received ideas, and probably appealed in a favourable manner to the patient's imagination.

Linacre, besides his translations of Galen into elegant Latin,* a work at the time of considerable value, wrote upon Mathematics and upon Grammar. He died on the 20th of October, 1624, at the age of sixty-four, and was buried in St. Paul's Cathedral, where a monument to his memory was soon afterwards erected by his admirer, Dr. Caius. The epitaph, written by Caius, characterizes him as "fraudes dolosque miré perosus, fidus amicis, omnibus juxta charus; aliquot annos antequam obierat Presbyter factus; plenus annis, ex hâc vitâ migravit, multum desideratus."

Linacre taught Greek to Erasmus and Sir Thomas More, and Latin to the Princess (afterwards Queen) Mary.

ANDREW BOORDE, 1490—1549.

Of this eccentric worthy, Thomas Fuller writes:—"Andrew Borde, Doctor of Physick, was (I conceive) bred in Oxford, because I find his book called the *Breviary of Health* examined by that University. He was Physician to King Henry the Eighth, and was esteemed a great scholar in that age. I am confident his book was the first written of that faculty in English [a mistake of Fuller's], and dedicated to the College of Physicians in London. . . . Indeed, his book contains plain matter under hard words, and was accounted such a jewel in that age (things whilst the first are esteemed the best in all kinds), that it was printed, *cum privilegio ad imprimendum solum*, for William Middleton, Anno 1548."

And Anthony Wood says: "He was esteemed a noted poet, a witty and ingenious person, and an excellent physician of his time."

That he was witty and ingenious may, we think, be granted; also, that for his time, he was a tolerably good physician. But

* In that of "De Temperamentis," published at Cambridge, 1521, Greek characters were used for the first time in England.

most assuredly, he was no poet. Of the divine gift of imagination he had not a particle, and his verse never rises to the level even of the jingling rhymes of Skelton. He would seem to have been a man of wayward and adventurous temper, with an excessive stock of animal spirits, which were uncontrolled either by a cool judgment or by a high moral sense.

A native of Pevensey, in Sussex,* he was born in the later years of the fifteenth century, was educated at Oxford, and admitted a Carthusian monk, while under the age required by the statutes of the order, in the convent in London. In 1521 he was dispensed from the monastic vows in order that he might become Suffragan Bishop of Chichester, but he never acted in that capacity. Released from religious obligations, he embraced the profession of medicine, and crossed the sea to prosecute his studies, and gratify "his rambling head and inconstant mind." He visited the principal countries of Christendom, and penetrated even into Africa, returning to England in 1530. He was then called in to attend the Duke of Norfolk, and having treated him successfully, was introduced by the Duke to Henry VIII. In 1532 he paid another visit to the Continent, and at the University of Montpellier took the degree of Doctor of Physic. Settling first at Pevensey, and afterwards at Winchester, he rose into such repute that he was appointed one of the Court physicians. He also secured the favour of Cromwell, the king's vicar-general, through whose influence he was released from the Charterhouse prison, in 1534, when confined there, "in thralldom," for some cause to us unknown.

Late in 1535 he went abroad for the third time, and we meet in his correspondence with traces of his travels in Catalonia and the south of France. His restless disposition carried him to Scotland in 1536, and he resided there for a twelvemonth,

* Or of Boord Hill, in Holmesdale, near Cuckfield.

practising his profession. "It is naturally given," he writes, "or else it is of a devilish disposition of a Scottish man, not to love nor favour an Englishman. And I, being there, and dwelling among them, was hated; but my sciences and other policies did keep me in favour that I did know their secrets."

In 1537 he was again on the Continent, and we may assume from graphic touches in his writings that his travels extended far and wide, into Spain, Flanders, Germany, Denmark, Italy, Greece, the Holy Land, and France, where, in 1542, he settled for awhile at Montpellier, and wrote his "Dietary," his "Breviary of Health," and "First Book of the Introduction of Knowledge," intended chiefly as a treatise on Medicine, but in this first book confined to a record of travel. He probably returned to England before the end of the year, and while in London wrote a "Treatise upon Beards." There is then a lacuna in his life until, in 1547, we find him living at Winchester in the enjoyment of considerable means, and actively engaged in publishing his principal compositions. Here the shameful charge, which seems to have been well-founded, was brought against him, of keeping an immoral house. He was declared guilty, removed to London, and cast into the Fleet prison, where he fell ill with a mortal sickness, and closed his wild and irregular career some time in April, 1549.

There is a tradition that his love of fairs and revels, and of sport generally, procured him the sobriquet of "Merry Andrew," a name now familiar enough as applied to a clown or a buffoon. In its present sense, however, it would be wholly inapplicable to Dr. Andrew Boorde, who, if a fellow of infinite humour—did he not Latinize his name into *Andreas Perforatus*?—was also distinguished by his shrewdness and worldly wisdom. On the whole, we incline to accept Mr. Furnivall's estimate of this remarkable member of the medical profession:—"A man at times of great seriousness and earnest-

ness, yet withal of a pleasant humour; reproving his countrymen's vices, and ridiculing their follies, exhorting them to prepare for their latter end, and yet to enliven their present days by honest mirth. A man eager to search out and know the truth of things, restless in that search, wandering far and often to see for himself. Yet a man bound by many of the superstitions of his time, though also free from many; not 'a lewd Popish hypocrite and ungratious priest,' as Harrison calls him, but a man genuine in his piety, as well as in his love of good ale and wine, and mirth; clever, able to take in a Scotchman; at times weak and versatile, showing off occasionally, readily helping strangers, chancing to get drunk, falling into sexual excess—having, like his sex, 'bursts of great heart and slips in sensual mire'—yet sound at the core, a pleasant companion in many of England's most memorable days, worthy, with all his faults, of respect and regard from our Victorian time. Any one who would make him a mere Merry Andrew, or more of that than anything else, is a bigger fool than he would make Boorde."

Boorde's medical works are "The Dyetary" and "The Breviary of Health."

"A Compendious Regiment, or a Dietary of Health," was written, he tells us, to show "how a man should order himself in all manner of causes pertaining to the health of his body." It is divided into forty chapters, and contains directions for building and ordering a man's house and household, for exercise, sleep, food and drink, besides suitable dietaries for health and sickness. As a specimen of its general character we extract the old physician's remarks upon Sleep, modernizing, however, his orthography, for the greater convenience of the reader:—

"When a man hath exercised himself in the daytime as is rehearsed, he may sleep soundly and surely in God, what chance so ever do fortune in the night. Moderate sleep is

most praised, for it doth make perfect digestion; it doth nourish the blood, and doth qualify the heat of the liver; it doth acuate, quicken, and refresheth the memory; it doth restore nature, and doth quiet all the humours and pulses in man, and doth animate and doth comfort all the natural, and animal, and spiritual powers of man. . . . The moderation of sleep should be measured according to the natural complexion of man, and in any wise to have a respect to the strength and the debility, to age and youth, and to sickness and health of man. First, as concerning the natural complexion of man, as sanguine and choleric men, seven hours is sufficient for them. And now, considering the imbecility and weakness of nature, a phlegmatic man may sleep nine hours or more. Melancholy men may take their pleasure, for they be the receptacles and the dregs of all the other humours. . . . The sick man may sleep at all times when that he may get it; but if he may sleep at any time, best it is for him to refrain from sleep in the day, and to take his natural rest at night, when all things is, or should be, at rest and peace; but he must do as his infirmity will permit and suffer. Whole men, of what age or complexion soever they be of, should take their natural rest and sleep in the night, and to eschew meridional sleep. But if need shall compel a man to sleep after his meat, let him make a pause, and then let him stand, and lean and sleep against a cupboard, or else let him sit upright in a chair and sleep. Sleeping after a full stomach doth engender diverse infirmities; it doth hurt the spleen, it relaxeth the sinews, it doth engender the dropsies and the gout, and doth make a man look evil coloured. . . .

“To bedward be you merry, or have merry company about you, so that, to bedward, no anger nor heaviness, sornes nor pensiffulness, do trouble or disquiet you. To bedward, and also in the morning, use to have a fire in your chamber, to waste and consume the evil vapours within the chamber, for

the breath of man may putrify the air within the chamber. . . . In the night, let the windows of your house, specially of your chamber, be closed; when you be in your bed, lie a little while on your left side, and sleep on your right side. And, when you do wake of your first sleep . . . then sleep on the left side; and, look, as often as you do awake, so often turn yourself in the bed from one side to the other. . . . To sleep on the back upright is utterly to be abhorred. When that you do sleep, let not your neck, neither your shoulders, neither your hands, nor feet, nor no other place of your body, lie bare undiscovered. Sleep not with an empty stomach, nor sleep not after that you have eaten meat, one hour or two after."

"The Breviary of Health" was a supplement or companion to "The Dietary." It is more interesting than the latter, because more strongly marked with its author's personality, and more characteristic of the age in which he lived. Our space limits us to the following extracts:—

"☞ The 50th Chapter doth show of an infirmity, the which is concurrent with an *Hyedropsy*.

"*Cacecia*, or *Cacexia*, or *Cathesia* be the Greek words; in Latin, it is named *Mala habitudo*. In English it is named an evil dweller, for it is an infirmity concurrent with the hidropsies.

"¶ The cause of this infirmity.

"¶ This infirmity doth come through evil, slack, or slow digestion.

"¶ A remedy.

"☞ Use the confection of Alkengi, and keep a good diet, and beware of drinking late, and drink not before thou do eat somewhat, and use temperate drinks, and labour or exercise the body to sweat. I was in this infirmity, and by great travail I did make myself whole, more by labour than by physic in receipts of medicines."

“☞ The 151st chapter doth show of an evil fever, the which doth cumber young persons, named the Fever burden.

“Among all the fevers I had almost forgotton the fever burden, with the which many young men, young women, maidens, and other young persons be sore infected now-a-days.

“¶ The cause of this fever.

“¶ This fever doth come naturally, or else by evil and slothful bringing up. If it come by nature, then this fever is incurable, for it can never out of the flesh that is bred in the bone; if it come by slothful bringing up, it may be holpen by diligent labour.

“¶ A remedy.

“☞ There is nothing so good for the Fever burden as is *Unguentum baculinum*, that is to say, Take me a stick or wand of a yard of length and more, and let it be as great as a man's finger, and with it anoint the back and the shoulders well, morning and evening, and do this xxi days; and if this Fever will not be holpen in that time, let them beware of wagging in the gallows; and whiles they do take their medicine, put no lubberwort into their pottage, and beware of knavering [query, *havering*, that is, chattering] about their hurt; and if this will not help, send them then to Newgate, for if you will not, they will bring themselves thither at length.”

“☞ Tho 110th chapter doth show of Drunkenness.

“*Ebrietas* is the Latin word. In Greek it is named *Maethæ*. In English it is named Drunkenness.

“¶ The cause of this impediment.

“☞ This impediment doth come either by weakness of the brain, or else by some great hurt in the head, or of too much riot.

“¶ A remedy.

“☞ If it do come by a hurt in the head, there is no

remedy but patience of all parts. If it do come by debility of the brain and head, drink in the morning a dish of milk, use a syrup named *Sirupus acetosus de prunis*, and use laxative meats, and purgatives, if need do require, and beware of superfluous drinking, specially of wine and strong ale and beer, and if any man do perceive that he is drunk, let him take a vomit with water and oil, or with a feather, or a rosemary branch, or else with his finger, or else let him go to his bed to sleep."

We conclude with Boorde's remedy for Pain and Adversity (c. 99):—

"If a man will eschew many pains and dolours, let him live a sober life, and not distemper or disquiet the body by any excess or sensuality. And let him arm himself with patience, and evermore thank God whatsoever is sent to man; for if adversity do come, it is either sent to punish man for sin, or else probation; and with sorrow use honest mirth and good company."

JOHN KAYE, or CAIUS, 1510-1573.

John Kaye, or Key, whose name, after the fashion of the time, was Latinized into Caius, was born at Norwich, on the 6th of October, 1510. He received the chief part of his education abroad, spending eight or nine months at Padua, with the great anatomist, Vesalius. After travelling through Italy, Germany, and France, he returned to England, a qualified physician, and practised successively at Cambridge, Shrewsbury, and Norwich; whence he was summoned to London by Henry VIII., to deliver anatomical lectures to the Surgeons in their own Hall, very shortly after their incorporation in 1540.

Caius enjoyed the dignity of Court Physician during the three successive reigns of Edward VI., Mary, and Elizabeth.

In 1547 he was admitted a Fellow of the College of Physicians; he afterwards passed through the several offices of consiliarius, censor, registrar, and treasurer, and in 1555 was elected president; an appointment which he held for seven years consecutively.

In some respects he followed closely in the footsteps of Linacre. Like him, he was learned in the Greek tongue; like him, he translated and revised certain of the treatises of Galen. But he did not confine himself to the classic languages. For the use of the people at large he wrote, in English, a manual or handbook upon the epidemic which was in that age the scourge of the country . . . "the strange and peculiar plague of the English nation." The title runs thus:—"A Boke, or Counsell against the Disease, commonly called the Sweate, or Sweatyng Sicknesse. Made by Ihon Caius, doctour in phisicke. Very necessary for everye personne, and much requisite to be had in the handes of al sortes for their better instruction, preparacioun, and defence, against the souddain comyng and fearful assaulting of the same disease" (1552).

In 1556, Caius revised and enlarged his "Counsell," and put it into Latin, with the title of "*De Ephemerâ Britannicâ*." In this larger treatise he deals at some length with the article of Diet, and enters into an elaborate description of the processes of brewing "Ale" and "Beer," concluding, by a somewhat awkward anti-climax, with an eulogium upon Temperance.

In 1557, Dr. Caius utilized his influence with Queen Mary to obtain a licence advancing Gonville Hall into a College; and the new foundation, which still bears his name, he endowed with lands for the maintenance of three fellows and twenty scholars. He held the mastership from 1559 until his death, residing there in his latter years, and assisting at daily prayers in the chapel, in a private seat erected for his accommodation.

He was the friend and correspondent of Gesner, the naturalist, and at his request wrote a treatise, "*De Canibus Britannicis*" (1570), in which he enumerates the following species :—"Terrere, harier, bludhunde, gaschunde, grehunde, lemnier, tumbler, spaniel, setter, water-spaniel or fynder, spaniel-gentle or comforter, shepherd's dog, mastive or bandedog, wappe, turnspit, dancer."

He had a great zeal for the honour of his profession, and as president of the College of Physicians waged hot war against unlicensed and ignorant practitioners. He issued an appeal to justices, sheriffs, bailiffs, and others, exhorting them to imprison offenders against the college laws—"men who were wandrying about the country with chaungeable names and false medicines, to the gret abus, deceyte of the Kynge's people, and losse of goods and lyves of the same." Surgeons—who were then uneducated men, and associated with barbers—as well as apothecaries, were prohibited from practising physic; and the latter were required not to divulge the names of medicines, nor to deliver physicians' prescriptions to the patients, as they often proved of dangerous consequence to them. His activity in this direction seems to have rendered him unpopular with the common people, or Shakespeare would hardly have affixed his name to the grotesque French doctor whom he introduces into "*The Merry Wives of Windsor*."

Dr. Caius died of premature decay on the 29th of July, 1573, in the sixty-third year of his age. He was buried in the chapel of his College, where his monument bears the pathetic inscription—"Fui Caius."

Of his numerous works we may notice, "*Hippocrates de Medicamentis*," which he discovered in MS.; and his "*History of the University of Cambridge*," in which he makes the astounding statement that his *Alma Mater* was founded by Cantaber three hundred and four years before Christ.

WILLIAM BULLEN, 15 -1576.

William Bullen, or Bulleyn, was born in the Isle of Ely, early in the sixteenth century, and came of the same family as the unfortunate Anne Boleyn. He received his education principally at Cambridge; travelled in France and Germany; afterwards visited Scotland. During the reign of Mary he practised medicine in Norwich; afterwards held for a few years the rectory of Blaxhall, in Suffolk, where he made himself well acquainted with the herbs and simples Nature furnishes so abundantly as remedies; and eventually settled at Durham, practising there with great success. In Sir Thomas Hilton, Governor of Tynemouth Castle, he found a warm friend and patron; and to him he dedicated his first book on "The Government of Health." Unfortunately the MS. was lost in a shipwreck; but, with a brave heart, Bullen, who, in 1560, removed to London, set to work to re-write it. The remainder of his life was overclouded with anxieties. "One William Hilton," he says—the brother of his patron—"accused me of no less crime than of most cruel murder of his own brother, who died of a fever (sent only of God) among his own friends, finishing his life in the Christian faith. But this William Hilton caused me to be arraigned before that noble Prince, the Duke's Grace of Norfolk, for the same; to this end to have had me die shamefully; that with the covetous Ahab he might have, through false witness and perjury, obtained by the counsel of Jezebel, a vineyard, by the price of blood. But it is written, *Testis mendax peribit*, a false witness shall come to naught; his wicked practice was wisely espied, his folly derided, his bloody purpose letted [hindered], and, finally, I was with justice delivered."

The same William Hilton afterwards made an attempt to get Bullen assassinated; but the physician baffled his unscrupulous foe, and he died in peace and honour on the

5th of January, 1576. He was buried in St. Giles's, Cripple-gate.

His principal works are "The Government of Health," and "The Book of Simples."

In the former he strongly advocates a sober and abstemious mode of living. His advice is summed up in a quaint couplet:—

"Esse cupis sanus? sit tibi parca manus;
Pone gulæ metas, ut sit tibi longa actas."

"If for health you are thiinking, be not often drinking;
If you'd live long quiet, be sparing of your diet."

In a very interesting passage he refers to the most eminent of his contemporaries, and enables us to get a glimpse of the medical fraternity then or recently established in London and elsewhere. He names the following:—Dr. Bartholomew, Dr. Barclay, Dr. Butts (Henry VIII.'s physician, immortalized by Shakespeare), Dr. Caldwell, of Oxford, Dr. Chambers, Dr. Clemms, Dr. Edwards, of Cambridge, Mr. Edmunds, surgeon, of York, Mr. Gale, of London, Dr. Hector, of Cambridge, Dr. Robert Huyck, the Queen's Physician, Dr. Freer, of Cambridge, Mr. John Porter, of Norwich, Dr. Langton and Dr. Larkin, of Cambridge, Dr. Masters, Robert Balthrop, surgeon, Thomas Colfe, apothecary, Dr. Wardy, of Cambridge, and Thomas Vicars, or Vicary, surgeon, of London. He praises the learned Dr. John Caius for revealing the hidden jewels and precious treasures of Galen. "The most worthy Dr. William Turner, whose learned acts I leave to the witty commendations and immortal praise of Conradus Gesnerus; yet his 'Book of Herbs' will always grow green, and never wither, as long as Dioscorides is had in mind among us mortal wights." He continues:—"In the noble state of knights, which of them did ever in race give a trip, outrun, or win the victory of Sir Thomas Elyot, knight? * Who hath planted such fruitful

* Author of "The Castle of Health," in which he speaks of "colds" as having recently been introduced into England. Unfortunately, they

trees, that his grafts do grow in each place in this our commonwealth, and his 'Castle of Health' cannot decay? Thomas Faire, or Phayer,* doctor of physick, is not dead, but is transformed and changed into a new nature, immortal. Dr. Andrew Borde wrote also well of physick to profit the commonwealth withal. I will not forget Master Thomas Paguinellus, or Pagnell, who hath played the good servant to the commonwealth in translating good books of physick. Dr. William Cunningham hath well travailed, like a good soldier, against the ignorant many, setting forth the praise, recommendation, and profit of astronomy, cosmography, and geography—a father in physick, whose learning gave liberty to the ignorant, with his 'Whetstone of Wit' and 'Castle of Knowledge.' ”

But Bullen is more likely to be remembered by his quaintly interesting “Book of Simples,” which is of permanent attraction to the botanist and horticulturist from the information it conveys in reference not only to the plants then cultivated in England, but to the fruits imported from foreign parts—a list so full and various as to awaken a suspicion that “the dessert” to which our forefathers sat down was little inferior in quality and quantity to that which now gleams and glitters on “the well-spread board.” It is valuable also for the side-lights it throws on the state of the Art of Healing in Elizabethan England, and the curious compounds in use as embrocations, electuaries, waters, plaisters, and the like.

Three other treatises are bound up with it, and the general title then runs:—“Bullein's Bulwarke of Defence against all quickly beecame naturalized. He is better known by his wise book, “The Governor.” He died in 1546.

* Thomas Phaer, a native of Pembrokeshire, was educated at Oxford; studied law at Lincoln's Inn, but exchanged the profession of law for that of medicine, and was esteemed a very skilful physician. He contributed the story of Owen Glendower to Sackville's “Mirror of Magistrates,” and translated into verse the first nine books of Virgil's “Æneid.” He wrote also several medical treatises. He died in 1560.

sieknes, sornes, and woundes that dooo daily assaulte mankinde, which Bulwarke is kept with Hillarius the gardiner, Health the physieian, with their ehyrurgien, to helpe the wounded soldiers. 1562." It is divided into four parts:—First, "The Book of Simples," which is thrown into the form of a series of Questions by Mareellus, and Answers by Hilarius, dealing with such subjects as herbs, plants, vegetables, fruits, and spiees,—brimstone, hartshorn, lime, lead, quicksilver, soap, salt, verdigris, varnish,—and the flesh of birds and animals. There are a few pages of rude woodcuts, illustrating "the strawberie," "eherie," "ehicorie," etc. The second part is entitled, "A Little Dialogue between Sorenes and Chyrurgi;" the third, "The Booke of Compoundes;" and the fourth, "The Booke of the Use of Siek Men and Medieines."

We give a few speeimen passages:—

An Embrocation.—"℞. Of a decoction of mallows, violets, barley, quinee seed, lettuce leaves, one pint; of barley meal, two ounces; of oil of violets and roses, of each, an ounce and a half; of butter, one ounce; and then seethe them all together till they be like a broth, putting thereto at the end four yolks of eggs; and the manner of applying them is with peeces of eloth, dipped in the aforesaid decoction, being actually hot."

A Precious Water.—"Take nutmegs, the nut ealled Doronike [*Doronicum*, or Great Leopard's bane], setwall, galangal, mastike, long peper, the bark of pomintron, of mellon, sage, bazel, marjorum, dill, spiknard, wood of aloes, cubebe, eardamom, ealled graynes of Paradise, lavender, peniroyall, mintes, sweet eatamus, germander, mulacampana, rosemary, stiehadess [*stæchas?*], and quinanee, of each lyke quantity; saffron, an ounce and half; the bone of a harte's heart grated, cut, and stamped; and beate your spyees grossly in a mortar. Put in ambergrice and musk, of each half a

drachm. Distil this in a simplo aqua vita, made with strong ale, or sackeleyes and aniseedes, not in a common styll, but in a serpentine; to tell tho virtue of this water against colde, phlegme, dropsy, heavines of minde, consuming of melancholy, I cannot well at thys present, the excellent virtues thereof are sutch, and also the tyme were to long."

"What is the virtue of Apples?" inquires Marcellus.

"Apples be very cold and windy," says Hilarius, "hard to digest, engenderers of ill blood, hurtful to phlegmatic persons, good to choleric stomachs, if they be thorough ripe, but best if they be roasted, or baked and eaten with gross pepper to bedward. They be of many kinds—as Custards, the Green Coats, the Pippin, the Queen Apple, and so forth. The distilled water of Apples, Camphor, Vinegar, and Milk, is a good medicine to anoint the faces of children that have the small-pox, when the said pox be ripe, to keep them from pits or sores, provided that they have given them in their milk Saffron or Mithridatum, to expel the venom, and keep them from the air during the said sickness. The pap of an apple, with rose-water, applied to the eyes, does quench the burning, and take away the redness of them. Apples are good in winter; eat them with a little salt. Tarts of apples, with aniseed, make sweet breath; there is a windy drink made of it."

Elizabethan literature abounds in books like Bullen's; in little treatises on special subjects connected with the Health, on medicinal herbs, on empirical remedies, on particular diseases, or hygienc generally. At two or three of these we may lightly glance; as, for instance, at "The Virtue and Operation of Balsam" (1585), in which Balsam is lauded in language worthy of a quack advertiser in the reign of Victoria. A single spccimen will suffice: "Any person which hath his sight beginning to fail him, let him continually resort unto

this Balsam, and they shall be holpen, and their sight shall be preserved. Make this Balsam warm, and rub therewith the nose within and without of all those which have a moist and cold brain; so shall they be preserved in great health thereby. And whosoever hath a cold rheum descending from the brain, let them use to rub their nostrils with this balsam three times a day, morning, noon, and night, and it helpeth them."

Then there is the quaint "Dialogue bothe Pleasant and Pitiefull, wherein is a godlie regiment against the Fever Pestilence, with a consolation and a comforte against Death;" date, 1573. The dialogue is carried on by twelve interlocutors, Medicus, Civis, Meudicus, Uxor, Antonius, Roger, Crispinus, Avarus, Ambodexter, Mendex, Mors, and Theologus, who discourse not only concerning the Pestilence, but about a troubled conscience, mixed bodies, God, the three powers of the soul, and so on.

"*Medicus*. Nothyng is better than a meane, called Temperaunce, whiche is governed by Pruden, whiche is ever content betwene both and rejoyseth in it.

"*Antonius*. So then, if a man fell into extreame adversitie, and sustaine it patiently in his sicknesse, povertie, or cause of grief, call you this a meane, or no?

"*Medicus*. In every worke or sufferiing there is pleasure or displeasure. If a man do rejoyce in trouble, in chastitie, in bearyng of cruell wordes, or slaunder, the same is a prudent man, and his sufferiing maketh it a meane to hym. But other men that are chastised, and will suffer outwardly, and it grieveth them in so doying, the same is vicious, and lacketh meane or prudence."

Lastly, we may notice "A Newe Booke entituled the Government of Healthe, wherein is uttered manye notable Rules for mannes preservacion, with sundry symples, and other matters no less fruiteful than profitable . . . reduced into the

forme of a Dialogue, for the better understanding of thun-learned." A specimen of the fruitful and profitable matter is subjoined, but in modern orthography :—

“*John.* I pray thee, friend Humfrey, what is Physic? . . .

“*Humfrey.* Hippocrates in his book of Winds or Blasts, sayeth of Physic or Medicine, [that it] is but a putting into the body that which it lacketh, or taking from the body things superfluous. And although our life be short, yet the art of Physic is long, because great numbers of things be in it, and requireth much study, labour, and practice; and, first of all, it requireth much contemplation or knowledge, in studying good books, which is called Theorie. Secondly, the very effect of contemplation or study is *practica* or *activa*, which is doing of the things that learning has taught us repairing, amending, or preserving the bodies of men, women, and children, etc.

“*John.* It seemeth to be a goodly science.

“*Humfrey.* Herodotus saith : they greatly err that call it a science, for it is an excellent art in *doing* of notable things. And Science is but to *know* things.”

CHAPTER V.

ANATOMISTS IN THE SIXTEENTH CENTURY.

THE first book upon Anatomy, after that of Mundinus, was compiled by Gabriel de Zerbi, of Varna, who taught in the University of Padua in 1495. Its title is—"Liber Anatomiae Corporis Humani et singularum Membrorum illius" (1503). "He follows, in general," says Hallam, "the plan of Mundinus, but his language is obscure, as well as full of inconvenient abbreviations; yet the germ of discoveries that have crowned later anatomists with glory is sometimes perceptible in Zerbi: among others, that of the Fallopian tubes." Portal gives him the credit of having described the first pair of the olfactory nerves. The work most esteemed by medical critics is his "*Anatomia Matricis et De Anatomia et Generatione Embryonis*" (1537).

In 1521 Béringer de Carpi published a commentary on Mundinus, and, in 1522, his "*Isagogae brevis in Anatomiam*." His practice of human dissection led him to detect several specific differences between the organization of man and that of quadrupeds. The zeal with which he carried on his anatomical researches brought upon him the accusation of having dissected some living Spaniards; and he was therefore banished from Bologna. The charge was not substantiated. According to Sprengel, he did much to improve and simplify the treatment of scalp wounds.

Many anatomical discoveries of importance, such as the ducts of the submaxillary glands and the vermiform appendix to the cœcum, are due to Alexander Achillini, who taught

anatomy and philosophy first at Bologna (where he was born in 1463) and afterwards at Padua. He preceded his contemporary, Berenger, in the dissection of human subjects; being, it is said, the first Italian who availed himself of the permissive edict of the Emperor Frederick II. From all parts of Europe students flocked to his lectures, which were rendered fascinating by their revelations of the wonderful structure of the human body. He was greatly addicted to the study of philosophy, so as to receive the honourable title of "The Second Aristotle"; but he followed Averroës, the Arabian commentator on the Stagyrice, rather than the great Master himself. He wrote a treatise on "Chiromantia, or Palmistry," and died in 1512, at a comparatively early age.

Germany may claim to have contributed some active and vigorous intellects to the important field of anatomical inquiry. Take, as an example, Johann Gonthier, of Andernach, born in 1487, who, like so many of his contemporary practitioners, was scholar, linguist, and philosopher, as well as physician, and assiduously promoted the cultivation of the sweet humanities of literature. His parentage was obscure, but through the assistance of generous friends he was enabled to pursue the work of self-culture at Utrecht and Marburg, and subsequently he became professor of Greek at Louvain. About 1525 he settled in Paris as a teacher of Greek; but at the instigation of the Cardinal du Bellay, who admired his abilities, he undertook the study of medicine, and took the degree of M.D. in 1530. As a lecturer, he commanded an immediate and extensive popularity, and was honoured as "primus anatomes in academiâ Parisiensi restaurator." He became Court physician to Francis I., but his strong Lutheran principles exposed him to a good deal of persecution, and he left Paris for Metz. Persecution followed him thither, and also to Strasbourg; so that, at last, he was compelled to return to the more liberal air of Germany. He died on the 5th of October, 1574.

He rendered good service to the classical literature of medicine by excellent translations of Galen, Oribasius, Paulus Ægineta, Trallianus, and Cœlius Aurelianus. Among his other notable works we may name his historical summary of medical progress, "*De Medicina Veteri et Nova tum Cognoscenda, tum faciunda*"; "*Commentarius de Balneis et Aquis Medicatis*"; "*De Victus et Medendi Ratione, tum alio, tum pestilentiae maxime tempore observanda*";* and "*Anatomicarum Institutionum, secundum Galeni sententiam.*"

Hippocrates found an admiring interpreter in Louis Duret, and Galen in Wilhelm Koch, of Basel. John Hagenbut, or Cornarius, won the commendation of Erasmus for his versions of Aëtius, Galen, and Dioscorides. Johann Lange was another of the great and glorious company of Reformers, who aimed at overthrowing the medical heresies of the Arabian school, and restoring the system of Hippocrates and Galen—or, in other words, the habit of close and equal observation, and an accurate detail of facts. Another of the Hippocratic restorers and disciples was the celebrated physician and botanist, Leonhard Fuchs, who was born at Wundingen in Suabia, in 1501, and was successively professor of medicine at Ingolstadt, Anspach, and Tübingen, where he died in 1565. His name has secured "a verdant immortality" in the beautiful *Fuchsia*, which was designated in his honour by Plumier; and he is the author of "*Institutiones Medicae*;" "*Historia Stirpium*;" "*Medendi Methodus*;" and "*De Sanandis Corporis Humani Malis.*" "Considered as a naturalist," says Hallam, "and especially as a botanist, Fuchs holds a distinguished place; and he has thrown a strong light on that science. His chief object is to describe exactly the plants used in medicine; and his prints, though mere outlines, are generally faithful."

But the greatest anatomist of the sixteenth century—the

* As disinfectants, during a visitation of the Plague, he, like Hippocrates, advocates the use of fires.

father, indeed, of modern anatomical science—an epoch-man, like Hippocrates, and Galen, and Harvey—was

ANDREAS VESALIUS, 1514-1564.

He was born at Brussels in 1514. He came of a family which had several connections with the medical profession; his uncle, Everardus, being a physician, who had written a comment upon Rhazes, and his father being apothecary to the Emperor Maximilian. After being carefully educated at Louvain, he studied medicine at Cologne, Montpellier, and Paris. His capacity and thirst for knowledge recommended him to Gonthier, who, in 1536, made him his principal assistant. It was in this year he made his discovery of the spermatie blood-vessels. In 1540 he became professor of anatomy at Padua, and wielded the dissecting knife with assiduity and keen perception, devoting himself to the composition of his great work on human anatomy, "*De Corporis Humani Fabricâ*," in seven books, the plates in illustration of which were executed by the first living artists, including, it is said, even Titian. This remarkable work fully justifies the glowing language in which Portal eulogizes its author:—"Vesalius appears to me," he says, "one of the greatest men who ever existed. Let the astronomers boast of their Copernicus, the natural philosophers of their Galileo and Torricelli, the mathematicians of their Pascal, and the geographers of their Columbus. I shall always place Vesalius above their heroes. The most important, the primary study, for man, is man, and Vesalius had this object always in view, and has admirably attained it; he has made in himself and his fellows such discoveries as Columbus could make only by travelling to the extremity of the world. The discoveries of Vesalius were of direct importance to mankind: by gaining fresh knowledge of his own body man seems to enlarge his existence, while he

is but indirectly affected by discoveries in geography or astronomy."

His system of anatomy is not complete, nor is it completely accurate; but it is a wonderful achievement, when we consider the conditions under which it was accomplished. Of the bones of the foot, of the muscles, the heart, the intestines, and, especially, the brain, he furnishes so full and exact an account, that his successors have scarcely been able to amend or extend it.

"The zeal of Vesalius and his fellow-students for anatomical science led them to strange scenes of adventure. Those services which have since been thrown on the refuse of mankind they voluntarily undertook. 'Entire affection scorneth nicer hands.' They prowled by night in charnel-houses, they dug up the dead from the grave, they climbed the gibbet in fear and silence to steal the mouldering carcase of the murderer; the risk of ignominious punishment, and the secret stings of superstitious remorse, exalting, no doubt, the delight of those useful but not very enviable pursuits."

The teaching of Vesalius, however, did not lack opponents; among whom were Sylvius (who called him *Vesarius*), Piccolomini, Driander, Putaeus, Eustachius, and Fallopius. He replied to their attacks and criticisms in his treatise, "*De Radicis Chinae Usu Epistola*," 1546.

In 1543, Vesalius accepted a professorship at Bologna, but removed almost immediately to Pisa, to fill the chair of anatomy, with an annual wage of eight hundred crowns. But in 1544, Charles V. having appointed him his physician, he went to reside at the Imperial Court. About ten years later he undertook a pilgrimage to Jerusalem, which brought about the end of his career. We do not think much credit can be given to the story which professes to account for his entering upon such an enterprise at the age of fifty,—namely, that in making a post-mortem examination of a Spanish gentleman

he observed, on opening the pericardium, some movement in the heart; that this circumstance becoming known to the dead man's relatives, they accused Vesalius before the Inquisition; and that he escaped a terrible punishment only through the favour of Philip II., who induced the authorities to be satisfied with a pilgrimage by way of expiation. While he was at Jerusalem, he received an invitation to succeed Fallopius in the chair of anatomy (1564). He accepted it, but in the voyage to Italy was wrecked on the island of Zante, where he fell a victim to the sufferings he had undergone.

The extent to which anatomical inquiry was pushed in the sixteenth century may be understood from a single fact. Portal, in his History, records the names of no fewer than 271 eminent men who distinguished themselves by their discoveries. Of these 111 were Italians; 66 French; 41 German; 24 Spanish; 13 English; 7 Dutch; 4 Portuguese; 3 Swiss; 1 Polish; and 1 Danish. The field is, of course, too wide to be embraced within the compass of the few pages to which we are confined, and we must be content with indicating those of its explorers who are most worthy of our remembrance and gratitude.

Gabriel Fallopius, or Fallopio, was born at Modena in 1523, and succeeded Vesalius in the chair of anatomy and surgery at Padua in 1557. He appears to have been destined originally for the Church, but being attracted by the delights of natural science, studied medicine at Ferrara, and delivered lectures there upon anatomy. He did not limit his investigations, however, to anatomy; he investigated the structure and relations of plants with much enjoyment. In 1543, a botanic garden had been laid out at Pisa, under the direction of Cæsalpinus; and Fallopius, two years later, established one for Padua, which he took in charge. After a brilliant career, he died in 1562. He was called "the Æsculapius of his age";

yet we know no more of his life than the few particulars compressed in the foregoing lines. He was better acquainted with the organ of hearing than any of his predecessors, and was the first to describe the aqueduct of Fallopius, containing the chorda tympani; the labyrinth and tympanum so named; and several muscles about the head and neck. Of the work done by Vesalius he was a very generous admirer, though Sprengel regards him as his superior.

Eustachius, professor of anatomy at Rome, devoted the energies of his life to anatomical research. Whether dissecting animals or man, the whole of his investigations were carried on with a view to the latter, whose structure he designed to illustrate in a series of copper-plate engravings which were not quite completed when he died in 1574. For nearly a century and a half they were lost sight of, and were then presented by Pope Clement XI. to Lancisi, his physician, who published them in 1714. Eustachius discovered and described the passage of communication between the ear and the thoracic duct known as the Eustachian tube.

To Rhodion we owe some considerable improvements in obstetrics (1532); and Nicholas Masson proved that the peritoneum was a closed sac formed of one continuous membrane. Charles Etienne, or Stephens (1536), an illustrious name, advanced a step towards the discovery of the circulation of the blood by detecting the valves of veins. In his treatise, "*De Dissectione Partium Corporis Humani*" (in three books), he describes the foramina in bones for the passage of the nutrient vessels. He was also the first to detect the distinction between the pneumogastric and sympathetic nerves.

Much was done towards the completion of our knowledge of the human organization by Fernel, who furnished a general description of the ligaments of the venous system (1542). John Philip Ingrassias, who restored the study of anatomy in the Neapolitan school, was a contemporary of Vesalius. He

enriched osteology by several discoveries, although he professed simply to write a mere commentary on Galen—"In Galeni Librum de Ossibus Commentaria;" but he examined the skeleton with so much care, and described it with so much exactitude, so absolutely free was he from the prejudice of his contemporaries, that he in many respects surpassed his master. He was born in Sicily in 1510, and died in 1580.

Of the precursors of Harvey we shall speak when our review brings us to that great man.

"The deep sense of imperfection in the received system of anatomy, and the restless longing for truth, which are manifest in the work of Ingrassias, are equally apparent in the writings of other authors: thus we find in Realdus Columbus [*'De Re Anatomicâ,'* 1553] a more accurate account of the holes in bones, and the vessels which enter them for the purpose of nutrition and growth, than in Etienne, to whom Portal has attributed the discovery of the foramina, although Columbus claimed it for himself. The foramen in the posterior part of the body of each vertebra he undoubtedly first pointed out; and, his anatomical genius leading him, as it did, to investigate every part of the body, he turned the knowledge thus acquired to account in propounding the doctrine of the pulmonary circulation. He also first recognized those membranous sacs which exist in every part of the body between the tendons of muscles and bones, for the purpose of lubricating their surfaces as they play over each other. This discovery is generally attributed to Albinus; but Portal has shown that the honour is due to Columbus, who, like Albinus, called them *bursæ*. By the same authority the merit of having discovered a third bone (the *stapes*) in the tympanic cavity of the ear is likewise attributed to Columbus."

To Vidus Vidius, the Italian physician, whom Francis I. summoned to Paris, where he made him his Court physician,

and appointed him first professor of medicine in his new foundation of the Royal College of France, we owe the description of the little tubercles, called Corpora Arantii, on the semilunar valves of the heart; the so-called Vidian canal for the transmission of the Vidian nerve; and the canal which leads from the third to the fourth ventricle of the brain. In his descriptions of the brain and the eye he advanced beyond all his predecessors.

Germain Colet, a French surgeon, obtained from a member of the Norsinis, of Milan, a knowledge of a swift and safe operation for stone in the bladder, and availed himself of it with success. The Colet family continued exclusively to perform this operation, and kept the method secret until 1535, when Marianus Sanctus, of Barletta, published his treatise, "*De Lapide Renum Liber, et Vesicæ Lapide Excidendo.*" From Marianus the method was imparted to Octavian da Villa, and by him it was communicated to Laurent Colet, who became the most expert operator in Europe.

Jacques Dubois, or, as he Latinized his name, Jacobus Sylvius, seems to have been self-educated. He was fifty-three years old when he took his Bachelor's degree, and began to lecture in Paris, at the College de Trinquet, with such success that he had soon an audience of four hundred students. In 1550 he succeeded Vidus Vidius in his chair at the Royal College. His knowledge of anatomy was exhaustive; but his merits were fiercely decried by the enemies whom his jealousy and avarice provoked. At his death, the following epitaph was suggested as suitable for him:—

"Sylvius hic situs est, gratio quid nil dedit unquam;
Mortuus, et gratio quod legis ista, dolet."

Passing over Arantius (Giulio Cesare Aranzio), who occupied the chair of medicine and anatomy in Bologna from 1556 to the time of his death, and discovered the true structure of the foetus and the placenta; and Varolius (Costanzo Varoli), born

1542, died 1575, who was physician to Pope Gregory XIII., and whose name is preserved by the *Pons Varolii*, the transverse medullary prolongation at the base of the lobes of the cerebrum; we come to Geronimo Fabrizio ab Acquapendente, or Fabricius,* as he is generally called, who was born at Acquapendente, in the States of the Church, in 1537. He was educated at Padua, under the great Fallopius, upon whose death, in 1562, he was appointed director of the anatomical classes in the University, and, in 1565, preferred to the chair of anatomy and surgery. His renown as a teacher extended over all Europe; his lectures were attended by crowds of eager students—amongst whom was our own great physician, William Harvey. He was pre-eminent as a systematist, and was gifted with a wonderful faculty of imparting knowledge in language so terse, pointed, and lucid, that it could neither be misunderstood nor forgotten. His lucidity and exactness are noticeable in his various treatises, which were collected and edited in 1687 (and again by Albinus in 1731), under the title of “*Opera Omnia Anatomica et Physiologica.*” Fabricius amassed a very large fortune, which, after a career of half a century, he retired to his country seat, on the banks of the Brenta, to enjoy. But his last years were embittered by domestic contention, and it is suspected that he died of poison, on the 21st of May, 1619, at the age of eighty-two. His special distinction is to have recognized and described the right function of the valves of the veins, and to have taught it to William Harvey.

Carcanus and Piccolomini, each in his turn, helped onward the march of scientific progress; and as much may be said of Gaspard Bacchin, whose enduring merit it is to have

* There were two other physicians of this name, Jakob Fabricius (1577–1652), professor of medicine at Rostock, and William Fabricius, surnamed Hildanus (1560–1634), author of “*Six Centuries of Observations and Cases.*”

assigned to most of the muscles the names by which they are now known. He was born at Basel on the 17th of January, 1560, and died there on the 5th of December, 1624. He held the professorship of anatomy at Basel, and afterwards that of practical physic, from 1588 to his death. He was not only an admirable anatomist, but a thoroughly cultivated botanist, and left behind him several works which revealed his enthusiasm for the science as well as his profound knowledge of it. His brother Johann, or John, combined the same tastes; he is still remembered by his great work on the history of plants, which contains about 5000 descriptions, with 3577 illustrations. He was born in 1541, and died in 1603. John Gaspard Bacchin, son of the former and nephew of the latter, born 1606, died 1685, held the chair of botany at Basel for thirty years, and in 1659 was appointed physician-in-ordinary to Louis XIV. He published treatises "On the Causes and Distribution of Diseases," and "On Plague and Epilepsy."

Posthius, in 1590, demonstrated the structure of the bulbs of the hair; and Gaspar Tagliacozzio, or Taliacotius, a Bolognese surgeon, born 1546, died 1599, revived the practice of plastic surgery. His fame rests upon the skill with which he operated for the remedy of deformities originating in the loss of the nose, lips, and ears, replacing these features by portions of integument from other parts of the body. For instance, to restore the nose, he raised a flap of skin from the front of the upper arm, and then applied it to the previously scarified seat of the old nose, keeping the arm raised, and the hand pressed to the forehead by means of a fitting bandage or dressing until cicatrization and union had been completed. The new nose was then released from the arm by incision, and was ultimately pared into shape. There were, of course, several stages in the delicate operation which we have described so rapidly. An account of them is given by the ingenious operator in his "*Epistola ad Hieronymum Mercuriarem de*

Nasibus, multo ante abscissis, reficiendis," published at Frankfurt in 1587. See, also, his treatise "Do Curtorum Chirurgia per iusionem," Venice, 1597.

Several other names are mentioned with more or less respect by the historians of medicine and anatomy—Volcher Coitier, a Dutchman, who passed his life, however, in Italy, Germany, and France; and was the first, perhaps, to describe the skeletons of several animals, and the osteology of the fœtus. In the *Biographie Universelle* he is called one of the creators of pathological anatomy. He was born in 1534, and died in the last years of the century. Then there are Alberti,* Benivieni, Donatus, Schank. Never, says Portal, were anatomy and surgery better cultivated, with more emulation or greater encouragement, than about the end of the sixteenth century; and Sprengel records a list of discoveries which shows that their general outlines and many of their most important details had by that time been consummated. Necessarily, the theory and practice of medicine profited greatly by a development so extensive; and the observations of this period became more acute as well as more exact. Those of Van Forreest† (1522—1597) and Plater still hold the place of standard classics in medical literature. Prospero Alpini, or Alpinus (1553—1617), is characterized by Sprengel as the father in modern times of diagnostic science. Plater, in his "Praxis Medica," made the first, though an imperfect, attempt at a classification of diseases. Joubert, of Montpellier, in his "Paradoxis," endeavoured to oppose a rational experience to the theories of the Greek school; many of his paradoxes are now established truths. Botal, of Asti, a pupil of Fallopius, introduced the practice of venesection on a scalo previously unknown. It was condemned by the Faculty of Medicine at Paris as erro-

* Jacopo Alberti published his treatise on Prognosis and Diagnosis ("Ζημειωτική sive Ratio Dignoseendarum," etc.) in 1596.

† "Observationum et Curationum Medicinalium, Libri xxviii."

neous and very dangerous; but had great success in Spain, where practitioners of the Sangrado type have ever since abounded.

We have left to the last an honoured name—that of the father of modern surgery—at all events, the founder of chirurgic science in France, and, we would venture to add, in Europe—

AMBROSE PARÉ, 1509–1590.

Ambrose Paré was born at Laval, in Maine, in 1510. His father was poor—too poor to pay his son's school fees—and, to make up the deficiency, the boy had to groom a mule and work in a garden. Being placed with a local doctor, he displayed an astonishing affection for the profession, and seized every opportunity of extending his knowledge of medical science. During his apprenticeship, the great surgeon, Laurent Colet, came down from Paris to operate on a patient in the town. Paré assisted, and thenceforward surgery became his favourite study.

He proceeded to Paris, and was regular in his attendance at the hospitals and in the dissecting-room. In 1536 he accompanied the French army to Italy, and was rewarded by a large experience in operations on wounded soldiers. Such was the repute which he gained for skill and humanity, that it is said his mere presence in a besieged town was sufficient to stimulate its garrison to an obstinate defence. It was as if these men felt it would be an honour and a pleasure to lose their limbs by the knife of so dexterous an operator! For nearly thirty years the campaigns of the French armies provided him with constant employment. He tells us himself that, besides being engaged in many sieges, he was present at the Battles of St. Quentin, Dreux, and Moncontour, and that, after the Battle of St. Denis, in 1567, he took charge of the wounded who were sent to Paris. He was then appointed professor of surgery

in the College of St. Edmé, and, as his fame increased, surgeon-in-ordinary to Henry II. In this, as in every position, he made the performance of duty his chief object, and laboured to accomplish something for the good of his fellows.

When Francis II. ascended the throne, Paré retained his appointment. The king's sudden death from inflammation and suppuration of the ear afforded his jealous and malignant rivals an opportunity to whisper away his fame by hinting that he had injected poison. But the queen-mother, Catherine de Medicis, coldly replied, "Non, non, Ambroise est trop homme de bien et notre bon ami pour avoir eu la pensée de ce projet odieux." He was appointed chief surgeon by Charles IX., whom he had cured of a painful disease of the arm induced by unskilful venesection, and, though he was a Huguenot, was saved on St. Bartholomew's Day by the king's special intervention. He locked him up in the royal chamber, saying, "Il n'est pas à propos d'avancer la mort d'un homme qui peut conserver un monde entier." *

After the death of Charles, Paré was appointed surgeon to Henry III., and the remainder of his long and honourable life was spent in the enjoyment of unclouded prosperity, which enabled him to devote to the development of his beloved science all the resources of his bold and original intellect. His the immortal praise which all nations agree in ascribing to the man who mitigates the pains and saves the lives of his fellow-creatures. It is impossible to estimate how much he accomplished in this direction by reviving, or introducing, the plan of securing bleeding arteries by ligatures after operation—a plan which an English surgeon afterwards happily applied to the cure of aneurisms. In his "Apology," with the modesty of true genius, he acknowledges that the idea was suggested to him by passages in Galen and other

* Or, as Brantôme puts it, "Qu'il n'était raisonnable qu'un qui pouvait servir à tout un petit monde, fût ainsi massacré !"

writers; but is so deeply moved by the superior value of ligatures to actual cautery, which had previously been used to arrest hæmorrhage after amputation, that he attributed his invention to Divine inspiration.

Paré, like Jean de Vigo, had believed gun-shot wounds to be poisonous by their very nature, and had, therefore, treated them with boiling oil; but, on one occasion, neglecting to resort to this remedy, he was surprised to find his patients better and freer from fever on the following day, and that their wounds healed more quickly than when the oil was used. He immediately abandoned the old heating and stimulating applications, and thus led the way to a more rational treatment.

His improvements in the treatment of many diseases and accidents bear witness to the originality and independence of his mind. It is admitted that his observations on the reduction of hernia, and on the operation in cases not admitting of reduction, have left wonderfully little to be done in the way of addition or amendment by later writers. Nor would it be easy to overrate the utility of his suggestions in regard to wounds on the head and fractures of the skull, and the use of the trephine. He was the first to distinguish fractures of the neck of the thigh-bone from the dislocation of the head of that bone. Partial relief, and occasionally complete recovery, have resulted from his method of making an opening into the chest so as to provide an artificial outlet for the discharge of matter which sometimes follows pleurisy. The obstetric art owes to him the operation of "version" in certain cases of abnormal birth, an improvement afterwards practised and recommended by his pupil Guillimeau. In short, though he did not shake himself entirely free from the superstitions of the age—as, for instance, he believed in demoniacs, and that the evil spirits manifested themselves by disordering the imagination, just as clouds assume their various shapes in the

atmosphere—yet was he in many respects far in advance of it, and to his immense intellectual vigour was due the impulse which directed modern surgery into its present course.

Paré published his first work, "*Manière de traiter les plaies faites par harquebuses, flèches, etc.*," in 1543. He compiled in all six-and-twenty treatises on various branches of practical surgery, and these he re-issued in a collected form in 1561. A translation of them into English was made by Thomas Johnson in 1678.

The great surgeon died in 1590, at the age of eighty-one.

CHAPTER VI.

GREAT EPIDEMICS.

THE Sixteenth Century may be called the Century of Epidemics. In almost every one of its hundred fateful years, Europe, or some part of Europe, was visited by plague or pestilence, and the record is painfully significant of that miserable condition of the common people which was the active and abiding cause of these terrible visitations. For if in certain cases the seeds were imported from the East, they attained their malignant growth through the congenial influences of the soil upon which they feil. In the cities and towns of Europe the very elements of sanitary science were unknown or neglected; while the poor were huddled together in the most wretched hovels, and scantily fed upon the most innutritious food. It may reasonably be doubted whether the lower classes, at any former period of the world's history, were exposed to such penury and privation, such maltreatment and oppression, as in the declining days of feudalism, when the old order was dying out, and the new order was not as yet established.

The century opened disastrously. In 1500, the curious disease indicated by *Signacula*, or "mould spots," appeared in Germany and France, while in London the Plague broke out with such virulence that 30,000 persons perished. In 1502 the Glandular Plague visited Brussels, spreading in the following year over France and Germany. In 1504, the chronicle tells of plague in Spain; of putrid fever and malignant pneumonia in Germany; and of pestilential fever every-

where. In 1505 the plague was in Portugal; while, according to Hecker, the first epidemic petechial fever made its appearance in Italy. In 1506 we read of the second appearance of the Sweating Sickness in England, and of pestilential epidemics in Spain, which continued throughout the year following. 1509, pestilence at Calais; 1510, influenza in Europe, and plague in England and the North of Europe. From 1511 to 1513, malignant fever and dysentery extended over Europe, gradually making their way into England. In 1515, malignant sore throat—probably the form we now call diphtheria—in Holland. In 1517 there were partial visitations of epidemic tracheitis and œsophagitis; and in the latter part of the year, the Sweating Sickness again ravaged England. It re-appeared in 1519. Germany, in 1520, suffered from *Lepra* (*Gravamina nationis Germanicæ*). The plague was fatal in 1521, 1524, 1526, and 1527. In 1528, the Sweating Sickness in England; and in 1530, heavy mortality in London and other places. In 1534, 1535, and 1537, malignant fever carried off hundreds of victims in various parts of Europe. France, in 1538, suffered from epidemic dysentery. Holinshed notes the occurrence, in 1540, of many deaths throughout most parts of the realm, “by a strange kind of hot ague and fluxes.” In 1541, 1542, 1543, and 1544, the plague. In 1545 and 1546, the epidemic known as “trousse gallant” visited France, and 10,000 English fell victims to it at Boulogne. From 1547 to 1551, the plague raged in Holland and France, and “mould spots” in Germany. The Sweating Sickness re-visited England in 1551, and extended to Antwerp and other places, but only amongst English people. In 1552 and 1553, malignant fever in Germany and Switzerland. In 1555 and 1556, Holinshed records that “hot burning fevers, and other strange diseases,” consumed many people in all parts of England, “particularly aldermen, of whom seven died between October and December.” 1557, petechial fever and hooping-

cough epidemic in France. In 1558, vehement quartan agues; and in 1561, smallpox in England. In 1563, the plague broke out at Newhaven, and strode swiftly to London, where, before the end of 1564, no fewer than 23,312 victims were claimed by it. It swept through France and Germany in 1564, and carried off, it is said, though the number seems improbable, 300,000 persons. Tarantism, or the Dancing Mania, was the special scourge of 1565. Hungarian petechial fever prevailed in 1566. From 1568 to 1577, the plague repeated its ravages in France, England, and Europe generally. There was a strange sickness at Oxford in 1577; and hooping cough and influenza throughout Europe in 1580. The epidemic called *Raphania* (or Kriebel Krankheit), a kind of gangrene caused by eating bread made from diseased corn, appeared in 1581, and extended throughout Germany from 1588 to 1595. The plague was in London in 1583. And we close the dreary catalogue with *Ischæmer*, or the Hungarian disease, in 1598.

We think the reader will agree with us that the sixteenth century was, as we have called it, a Century of Epidemics, though it was also the century in which the Science of Medicine made its greatest progress, and began to assume the aspect which it now presents.

THE BLACK DEATH.

In briefly glancing at the great Epidemics which have devastated Europe, it will be necessary for us to begin with the fourteenth century, the era of "the Black Death."

This terrible pestilence, in all respects deserving of its terrible name, broke out in China in 1334. Its origin, however, goes back to a much remoter date; for references to an epidemic exactly resembling it occur in history prior to the Christian era.

"When the forces of creation come into violent collision,"

says Hecker, "the ordinary alternations of life and death are apt to be disturbed, and the Destroying Angel waves over man and beast his flaming sword." Earthquakes, floods, and tempests, extending from China to Western Europe, had continued for fifteen or sixteen years, towards the middle of the fourteenth century; and thereupon a singularly fatal disease broke out in the great Asiatic empire, and spreading to the western countries of Asia, made its way into Africa and Europe, extending even to Iceland and Greenland, and marking its track of desolation by hundreds and thousands of victims. It appeared in Constantinople in 1347, brought thither by the caravans from Central Asia.

It reached Italy in 1348, heralded "by a dense and awful fog," and imported by Genoese vessels; and Boccaccio, in his introduction to "*The Decameron*," has described its ravages in Florence with the imagination of the novelist and the exactitude of the historian. He shows us the noble and the wealthy shutting themselves up in their palaces and mansions,* and endeavouring to keep the pestilence from their thoughts by the incessant pursuit of pleasure. He tells us of the excessive intemperance in which the licentious indulged. He tells of the cowardly selfishness which, thinking only of its own safety, sundered every tie of domestic affection and friendship. And he tells of the misery of the proletariat, who perished by thousands unaided in their hopeless poverty. Travelling westward, the epidemic arrived in England on the 31st of May, 1349, and continued its havoc, according to Sir Harris Nicolas, until the 29th of September, though other authorities claim for it a longer duration. It carried off in London 100,000

* The Pope, Clement VI., set the example, immuring himself in his palace-fortress at Avignon, and burning great fires night and day. Among the visitors at Avignon were Cardinal Colonna, the chief patron of Petrarch, and the lady whom the poet has immortalized under the name of Laura. The Pope consecrated the river Rhone in order that it might be used as a cemetery.

souls ; in other parts of the country equally appalling was the loss of life. Nine-tenths of the population—but here, again, exaggeration must be suspected—are said to have perished. A register of the Abbey of Gloucester puts down the loss at two-thirds—that is, two out of every three inhabitants fell victims—though this, too, seems incredible. But how sweeping it was in its effects we know from the action of the English Government. The rich and noble did not suffer in the same proportion as the poor ; but their lands went untilled for want of labourers, and as many as were able fled to other countries with their capital. Accordingly, Edward III., on the 1st of December, issued a precept to the mayors and bailiffs of all the ports, stating that no small portion of the population being dead of the great pestilence, and the king's treasury greatly exhausted, he has been informed that many persons are flying from the country with their wealth, which, if permitted, would leave the land destitute of men and money ; and he therefore directs that no man be suffered to go abroad, except he be a merchant, notary, or messenger.

The decrease in the value of land was accompanied by a corresponding increase in the value of labour. In the winter which followed the pestilence, “flocks and herds wandered about the fields and eorn without any that could drive them.” Landlords remitted the rents of their tenants for two and three years, lest they should abandon their holdings and leave them uncultivated on their owners' hands. Wages ran so high as to absorb the farmer's profit, and it was almost as ruinous to comply with the demands of the labourers as to suffer the crops to go ungathered. At last, in June, 1349, Edward III. addressed a proclamation to the sheriffs of the several counties :—“ Seeing that a great of the people, and principally of labourers and servants, is dead of the plague, and that some, seeing the necessity of masters and the scarcity of servants, will not work unless they receive exorbitant wages,

and others choosing rather to lay in idleness than to earn their bread by labour, . . . we have ordained, by the advice of our prelates and nobles, and other skilled persons, that every able-bodied man and woman of our kingdom, bond or free, under sixty years of age, not living by trading, or having of his or her own wherewithal to live, . . . shall, if so required, serve another for the same wages as were the custom in the twentieth year of our reign." So violent and unjust an interference with individual liberty naturally led to "a strike" on the part of the labourers, and to meet this difficulty, Parliament, when it met, proceeded, in an equally unjust spirit, to enact the famous "Statute of Labourers" (25 Edw. III. c. 1), fixing a scale of wages to which masters and men were required to adhere under penalty of the stocks, which were to be forthwith set up in every town "betwixt this and the Feast of Pentecost." Penalties were also imposed upon all who migrated from one district to another to evade this arbitrary statute—which, we may add, was the direct cause of the rebellion of the commons, under Wat Tyler, in the following reign.

Evidences as to the desolation wrought by the Black Death multiply upon us as we peruse the pages of the chronicles of the time. "Many villages and hamlets," says William Knyghton, "were depopulated; not a house being occupied in them, all their inmates having died." Not even the brute creation escaped; the carcasses of oxen, and horses, and sheep putrified in the pastures, untouched even by dogs or birds of prey. Silence reigned in all these solitary places; but in London the streets re-echoed with the clang of the passing bell, and the rattle of the death carts hurrying to the graveyards with their fearful load; "no time was to be lost, lest the survivors should soon be too few to bury the dead." Stow informs us that he had himself seen an inscription on a stone cross in the Carthusian burial-place, formerly the "Spittle Croft, outside West Smithfield Bars," recording that 50,000

corpses were buried therein and in the adjoining crypt. And the Spittle Croft was not used for this purpose until the London churchyards were already full.

At Yarmouth, 7000 died out of 50,000. In Bristol, "the living were scarce able to bury the dead," and the grass grew several inches high in Broad Street and High Street. Norwich was almost unpeopled. A contemporary authority, still extant in the Norwich Guildhall, states that in that city 57,374 persons, besides religious and beggars, died. In England the upper classes were sometimes attacked as well as the lower. Parliament could not hold its session; the courts of justice were closed. For many months the pestilence did not cross the Borders, and "by the foul death of the English" was an oath much affected by the Scotch marauders. But a large company of these wild and adventurous spirits assembling to make a descent on the unprotected English counties, the Black Death suddenly swooped down upon their camp near Selkirk, and struck down 5000 of them, the rest hastily escaping to their houses, and carrying with them the seeds of mortality to sow broadcast all over Scotland.

In Europe, the Black Death, on a moderate computation, claimed 25,000,000 victims. Fifteen European cities lost among them about 300,000; Germany, 1,244,434; Italy, half her population. In face of a mortality so stupendous, so universal, so contemptuous of differences of age, sex, and strength, so disregardful of social distinctions, it is not astonishing, perhaps, that society lost its moral balance, that humanity trampled under foot its divinest feelings. How respond heartily to the greeting of a friend, who all the time might be searching, with tremulous finger, for "the little hard kernel no bigger than a pea, which moved with the touch, under the skin of the armpit," and was regarded as the precursor of inevitable death? How gaze with tender interest on the face of wife or mistress, when the "muddy glistening of

her eye only too sadly betrayed that the plague was upon her?" Society, dismissing all considerations of Christian faith and religious duty, fell, panic-stricken. The mother abandoned the babe on her bosom; the wife fled with shrieks and cries from the side of her husband. The superstitious hastened to heap their offerings on the shrine of saint or martyr, whence the pale-faced priests trembled to remove them, lest gold, silver, and gems should alike be tainted with death. Age was infected with cowardice not less than youth; manhood showed as pitiful a weakness as feeble womanhood. It was a reign of Terror—of bodily and mental, credulous, selfish, and degraded Terror.

In Europe, the disease generally made its appearance in a victim with tumours or boils in the armpits and the groins, though others were scattered more or less over the whole body, together with the black spots, significant of the process of putrid decomposition already at work, which procured it the name of the Black Death. These were followed by stupor and by palsy of the tongue, which became black and indescribably foul; by burning and unquenchable thirst; and by a putrid inflammation of the lungs, attended with acute pains in the chest, the expectoration of blood, and a fatal pestiferous breath. The symptoms differed in different persons and at different times, with the exception of the tumours and black spots, which were always present. In almost every case death occurred in two days; sometimes, in three or four hours.

That a disease so terrible in its effects and dimensions should be regarded as a visitation from God—a scourge laid upon the world in chastisement of its vice and self-indulgence—was natural enough; and Christians of all denominations suddenly seized the idea that the common sin should be expiated by a common penance. The end of the world—the day of doom and of God's indignation—was at hand; what should men do to be saved? The fanaticism of the Flagellants,

which had been first known in the preceding century, was revived. They professed to have come into Germany from Hungary, and displayed a letter which an angel was said to have delivered in Jerusalem, declaring the Saviour's wrath against mankind for profaning the Lord's Day, for neglect of fasting, for blasphemy, usury, adultery, and other sins. They assumed for themselves a mediatorial influence, and undertook a kind of vicarious penitence for the rest of the community. As they went from place to place, they increased in numbers and repute. Many nobles and ecclesiastics joined them, as well as honourable women and nuns, and the infatuation spread rapidly and widely. Their distinctive dress consisted of a black garment, with a red cross on the back and breast, and a third on the cap, which covered the head down to the eyes. Rich banners of velvet and gold were borne before them, and lighted tapers; while every person carried a scourge with three lashes, each one tied into knots, into which were inserted pieces of pointed iron.

Twice a day they did penance; that is, morning and evening, going abroad in couples, chanting psalms; and on arriving at certain stations, they stripped to the waist, put off their shoes, and whipped themselves until the blood flowed—declaring that the blood thus shed was mingled with that of the Redeemer, and superseded the necessity of the Sacraments. When the Saviour's passion was mentioned in their hymns, they threw themselves down on the earth "like logs of wood," with their arms outstretched in the form of a cross, and remained prostrate in prayer until they received a signal to rise. They were under "masters" of their own, to whom all were required to swear obedience; and they assumed a hostile and even threatening attitude towards the clergy. From Germany they marched into France; but the king forbade them to approach the capital, and the University of Paris pronounced their ceremonies "a vain superstition"—which

indeed, they were, though the movement had its good and useful side as a protest against the immorality of the age. At the request of the University, flagellancy was condemned by Pope Clement, who called upon the European princes to prohibit it. A band of Flagellants reached England; but our phlegmatic countrymen looked on their self-chastisement with indifference—probably, with contempt. It was not a form of religion in harmony with the practical English character.*

The physicians of the day were, with few exceptions, completely overwhelmed by the formidable character of the pestilence, and, depending on popular remedies and old superstitions practices, were equally helpless in the way of cure or prevention. Gentilis de Fulgines, of Perugia, however, rose superior to the errors and follies of his brethren. He attributed the disease to a putrid corruption of the blood, and recommended as preventives a purification of the air and nutritious diet. Galeazzo di Santa Sofia thought the cause was an unknown change or corruption in the air, caused by the putrefaction of locusts which had perished in the sea and been again thrown up, combined with astral and terrestrial influences. The treatment he proposed was, first, bleeding, to evacuate putrid matter from the blood; second, strengthening the heart to prevent putrefication; third, appropriate regimen; fourth, improvement of the air; fifth, appropriate treatment of tumid glands or boils; and sixth, due attention to prominent symptoms. An extraordinary document was issued by the medical faculty of Paris in reply to an official request for their opinion. It illustrates in the most effective manner the state of the Healing Art in the middle of the fourteenth century:—

“We, the members of the College of Physicians of Paris,

* For the Black Death, see Boccaccio, “Decameroni,” ed. Ugo Foscolo, 1825; Hecker, “Epidemics of the Middle Ages,” transl. by Babington; Knyghton (in Twysden); Michelet, Tiraboschi, Pauli, etc.

have, after mature consideration and consultation on the present mortality, collected the advice of our old masters in the art, and intend to make known the causes of this pestilence more clearly than could be done according to the rules and principles of astrology and natural science. We therefore declare as follows :

“ It is known that in India, and the vicinity of the great sea, the constellations which combated the rays of the sun, and the warmth of the heavenly fire, exerted their power especially against that sea, and struggled violently with its waters. (Hence vapours often originate which envelope the sun, and convert his light into darkness.) These vapours alternately rose and fell for twenty-eight days ; but, at last, sun and fire acted so powerfully upon the sea, that they attracted a great portion of it to themselves, and the waters of the ocean arose in the form of vapour ; thereby the waters were, in some parts, so corrupted, that the fish which they contained died. These corrupted waters, however, the heat of the sun could not consume, neither could other wholesome water, hail, or snow, and dew originate therefrom. On the contrary, this vapour spread itself through the air in many places on the earth, and enveloped them in fog.

“ Such was the case all over Arabia, in a part of India, in Crete, in the valleys and plains of Macedonia, in Hungary, Albania, and Sicily. Should the same thing occur in Sardinia, not a man will be left alive ; and the like will continue so long as the sun remains in the sign of Leo, on all the islands and adjoining countries to which this corrupted sea-wind extends, or has already extended, from India. If the inhabitants of those parts do not employ and adhere to the following or similar means and precepts, we announce to them inevitable death, except the grace of Christ preserve their lives.

“ We are of opinion that the constellations, with the aid of nature, strive, by virtue of their divine might, to protect and heal

the human race ; and to this end, in union with the rays of the sun, acting through the power of fire, endeavour to break through the mist. Accordingly, within the next ten days, and until the 17th of the ensuing month of July, this mist will be converted into a stinking, deleterious rain, whereby the air will be much purified. Now, as soon as this rain shall announce itself, by thunder or hail, every one of you shall protect himself from the air ; and, as well before as after the rain, kindle a large fire of vine-wood, green laurel, or other green wood ; wormwood and chamomile should also be burnt in great quantity in the market places, in other densely-inhabited localities, and in the houses. Until the earth is again completely dry, and for three days afterwards, no one ought to go abroad in the fields. During this time the diet should be simple, and people should be cautious in avoiding exposure in the cool of the evening, at night, and in the morning. Poultry and water-fowl, young pork, old beef, and fat meat in general, should not be eaten ; but, on the contrary, meat of a proper age, of a warm and dry, but, on no account, of a heating and exciting nature. Broth should be taken, seasoned with ground pepper, ginger, and cloves, especially by those who are accustomed to live temperately, and are yet choice in their diet. Sleep in the daytime is detrimental ; it should be taken at night until sunrise, or somewhat longer. At breakfast, one should drink little ; supper should be taken an hour before sunset, when more may be drunk than in the morning. Clear light wine, mixed with a fifth or sixth part of water, should be used as a beverage. Dried or fresh fruits, with wine, are not injurious, but highly so without it. Beetroot and other vegetables, whether eaten pickled or fresh, are hurtful ; on the contrary, spicy pot-herbs, as sage or rosemary, are wholesome. Cold, moist, watery food is, in general, prejudicial. Going out at night, and even until three o'clock in the morning, is dangerous, on account of the dew. Only small

river fish should be used. Too much exercise is hurtful. The body should be kept warmer than usual, and thus protected from moisture and cold. Rain water must not be employed in cooking, and everyone should guard against exposure to wet weather. If it rain, a little fine treacle should be taken after dinner. Fat people should not sit in the sunshine. Good clear wine should be selected and drunk often, but in small quantities, by day. Olive oil, as an article of food, is fatal. Equally injurious are fasting and excessive abstemiousness, anxiety of mind, anger, and immoderate drinking. Young people, in autumn especially, must abstain from all these things, if they do not wish to run a risk of dying of dysentery. Bathing is injurious. Men must preserve chastity as they value their lives. Every man should impress this on his recollection, but especially those who reside on the coast, or upon an island into which the noxious wind has penetrated."

A remedy suggested by Bernarbo, in 1379, led to a practical result; though in its original form it was dictated by cold-blooded selfishness. He proposed that every plague patient should be removed from the city into the fields, and left there to die or live; and that those removing them and attending upon them should remain isolated for ten days before being readmitted into the city. On each successive visitation, a modification of this system was adopted, and, ultimately, isolated houses, or Lazarettos, were constructed at a certain distance from each large town for the reception of the sick or suspected.

ST. VITUS'S DANCE.

An epidemic of a curious character broke out in Germany in 1387, when some Germans, male and female, made their appearance in the streets of Aix-la-Chapelle, dancing in circles hand-in-hand for hours together, until they fell to the ground

in a state of complete exhaustion. There is an immense attraction for the vulgar in a new form of excitement; and this dancing mania spread rapidly throughout Germany, Belgium, and Holland. It was introduced into England towards the close of the century. Burton, in his "*Anatomy of Melancholy*," refers to it as "the Chorus Sancti Viti, or Saint Vitus's Dance; the Lascivious Dance, Paracelsus calls it, because they who are taken with it can do nothing but dance till they be dead or cured. It is so called for that the parties so troubled were wont to go to St. Vitus for help; and after they had danced there awhile they were certainly freed."

Very similar in character was the dancing mania called *Tarantism*, which broke out almost contemporaneously with "the Dance of St. Weit." It appeared chiefly in Italy, and particularly in Arabia, where are found the large ground spiders, *Tarantula*, in the bite of which the disease was supposed to originate. The only effective remedy was the use of vocal or instrumental music.

THE SWEATING SICKNESS.

The *Ephemera*, or *Sweating Sickness*, "the strange and peculiar plague of the English nation," as Mr. Froude calls it, first showed itself, in 1485, among Henry Tudor's soldiers, after his landing at Milford Haven. It spread to London, and prevailed there during the months of August, September, and October. In 1506 it re-appeared; and again in 1517, when such was its violence that people died of it in three hours, rich and poor, old and young, for it knew no distinction of rank, age, or sex.

Lord Bacon, in his "*History of the Reign of King Henry the Seventh*," furnishes an interesting description of this third visitation:—

"About this time, in autumn, towards the end of September, there began and reigned in the city, and other parts of

the kingdom, a disease then new : which by the accidents and manner thereof they called the Sweating Sickness. This disease had a swift course, both in the sick body, and in the time and period of the lasting thereof ; for they that were taken with it, upon four and twenty hours escaping, were thought almost assured. And as to the time of the malice and reign of the disease ere it ceased, it began about the one and twentieth of September, and cleared up before the end of October, inasmuch as it was no hinderance to the king's coronation, which was the last of October ; nor, which was more, to the holding of the Parliament, which began but seven days after. It was a pestilent fever, but, as it seemeth, not seated in the veins or humours, for that there followed no carbuncle, no purple or livid spots, or the like, the mass of the body being not tainted ; only a malign vapour flew to the heart, and seized the vital spirits ; which stirred nature to strive to send it forth by an extreme sweat. And it appeared by experience, that this disease was rather a surprise of nature than obstinate to remedies, if it were in time looked into. For if the patient were kept in an equal temper, both for clothes, fire, and drink, moderately warm, with temperate cordials, whereby nature's work were neither irritated by heat, nor turned back by cold, he commonly recovered. But infinite persons died suddenly of it, before the manner of the cure and attendance was known. It was conceived not to be an epidemic disease, but to proceed from a malignity in the constitution of the air, gathered by the predisposition of seasons ; and the speedy cessation declared as much."

The epidemic returned again in 1568, when Henry VIII. narrowly escaped its ravages, and in July, 1551, for the last time. The common statement that it was peculiar to England is certainly erroneous, since it was unquestionably introduced by the foreign levies in Henry of Richmond's army, and in 1529 and 1530 raged with fatal effect in Germany and the Low

Countries. The singular phases it presented, its recurrence at irregular intervals, and its sudden extinction, are conditions of the epidemic for which no satisfactory explanation has been offered. If its causes were "evil diet," filthy modes of living, and want of ventilation, we cannot affirm that they were less active or potent when the pestilence disappeared than when it began.

The sufferers from it in 1551 were usually men between thirty and forty, and the healthiest and the strongest were invariably the first to be attacked. The symptoms were a sudden sweat, accompanied with faintness and drowsiness. Those who were taken with full stomachs perished immediately; those who caught cold "shivered into dissolution" in a few hours. If the sick man yielded, even but for a few minutes, to the temptation to sleep—and it was almost irresistible—he awoke only to die; and so fatal was the operation of the fell destroyer, that of seven citizens who one night supped together, six were dead before morning. In London alone, eight hundred men died in one July week. "It was a terrible time," says Stow; and Holinshed puts forward as the only hopeful remedy that the patient should be "kept close with moderate air, and drink posset ale or such like for thirty hours, and then the danger was passed."

Dr. Caius, whose biography we have sketched in a preceding chapter, the leading English physician of his time, prepared a treatise for the use of his countrymen at this crisis. He entitled it "*A Booke of Counseill against the Disease, commonly called the Sweate or Sweatyng Sicknesse. Made by Ihon Caius, doctour in physicke. Very necessary for everye personne, and much requisite to be had in the handes of al sortes, for their better instruction, preparacion, and defence, against the souddain coming and fearful assaulting of the same disease*" (1552).

His system of treatment is directed to facilitate the sweat,

and strict rules are laid down for avoiding anything that might expose the patient to the least cold, or check this wholesome effort of nature. "If two be taken in one bed," he says, "let them so continue, although it be to their unquietness; for fear whereof, and for the more quietness and safety, very good it is, during all the sweating time, that two persons lie not in one bed." A drink is ordered—posset ale, made of sweet milk, turned with vinegar, in a quart whereof parsley and sage, of each half, one little handful, hath been sodden. If under this treatment the sufferers feel faint, they are to be made "to lie on their right side, and bow themselves forward, call them by their names, beat them with a rosemary branch, or some other sweet little thing; do not let them on any account sleep, but pull them by the ears, nose, or hair, suffering them in no wise to sleep, until such time as they have no lust to sleep; except to a learned man in physick, the case appears to bear the contrary. If under this discipline they happily recover, and find their strength be sore wasted, let them smell to an old sweet apple, and use other restoratives of similar efficacy; for there is nothing more comfortable to the spirits than good and sweet odours."

Dr. Caius calls the disease "Ephemera," or a fever of one natural day, because it lasted only twenty-four hours. He specifies several causes, but sets forth as chief among them the "evil diet" of his countrymen, "which destroyeth more meate and drinke," he says, "without all order, convenient time, reason, or necessity, than either Scotland or all other countries under the sun, to the great annoiance of their bodies and wits, hindrance of those which have need, and great dearth and scarcity in the commonwealth. Wherefore if Esculapius, the inventor of physick, the saver of man from death, and restorer to life, should return again to this world, he could not save these sorts of men. . . . Those who had the disease sore, with peril of death, were," he adds,

“men of wealth, ease, and welfare; or if the poorer sort, such as were idlo persons, good ale drinkers, and tavern haunters—the laborious and thin dieted escaped.”

Hecker remarks that the habits of the English people at this time were seriously injurious to health, especially in certain climatic conditions, as, for instance, when the atmosphere was loaded with humidity. “They were unaccustomed to cleanliness, moderation in their diet, or the refinements of comfort. Gluttony was common among the nobility as well as among the lower classes; all were immoderately addicted to drinking the luscious Greek wines, especially Cretan wine, Malmsey and Muscat, and the manners of the age sanctioned this excess at their banquets and their festivities. If we consider that the disease mostly attacked strong and robust men—that portion of the people who abandoned themselves without restraint to all the pleasures of the table—while women, old men, and children almost entirely escaped, it is obvious that a gross indulgence of the appetite must have had a considerable share in the production of this unparalleled plague.”

With a quotation from Grafton’s “Chronicles” we pass on to another branch of our subject:—

“A new kynde of sicknes came suddainly through the whole region . . . which was so sore, so paynefull, and sharp, that the like was never heard of, to any man’s remembrance before that tyme. For sodainely a deadly and burning sweate invaded their bodies and vexed their blood, and wyth a most ardent heat infested the stomacke, and the head grievously, by the tormenting and vexacion of which sicknesse men were so sore handled, and so painfully panged, that if they were laid in their bedde, beyng not able to suffer the importunate heate, they cast away the sheetes and all the clothes lying on the bed. . . . Other were so drye, that they dranke the cold water to quench their importunate

heato and iusatiablo thirst. All in maner as sone as the sweato tooke them, or within a shorte space after, yelded up thoyr ghost. So that of all them that sickened, there was not one amongst an hundreth that escaped. At the lengthe, by studie of phisitions, and experience of the people driven thereunto by dreadful necessitie, there was a remedie invented. And it was this: If a man in the day-time were plagued with tho sweate, then he should straight lio down with all his clothes and garments, and lie still the wholo xxiiij hours. If in the night he were taken, then he should not rise out of his bedde for the space of xxiiij hours, and so cast the clothes that he might in no wise provoke the sweate, but so lye temperately that the water might distill out softly of its owne accorde, and to abstayne from all meate, if ho might so long abstayne, and suffer hunger, and to take no more drinke, neyther hote or colde, than wyll moderately quench and delay his thirstie appetite. And in this his comending, one point diligently above all other is to be observed and attended, that he never put his hand or foote out of the bed to refresh or coole himself, the which to doe is no lesse payne than short death."

RAPHANIA—PETECHIAL FEVER.

Dr. Aitken has defined Raphania as "a train of morbid symptoms, produced by the slow and cumulative action of a specific poison peculiar to wheat and rye, which gives rise to convulsions, gangrene of the extremities, and death." It was originally known as *St. Anthony's Fire*—a term now bestowed upon Erysipelas—and, afterwards, as *Epidemic Gangrene*. The Germans called it *Kriebel Krankheit*, or spasmodic tragedy, a title of peculiar significance. It was first named *Raphania* by Linné, from a supposition that its morbid symptoms arose from an admixture of *Raphanus Raphanistrum*, or jointed charlock, with wheat used as food. It has received its modern designation of Ergotism from the fact that it originates in the develop-

ment of a poisonous fungus on the grain, like *ergot* upon rye. It is induced, therefore, by the eating of diseased corn.

The disease appears under two forms, the spasmodic and the gangrenous. The latter is much the more fatal, about 90 per cent. dying of those attacked. The former begins with tingling or itching of the feet and hands, and sometimes of the head, with violent contractions of the extremities, which cause intense pain in the joints. The appetite becomes abnormal; spots like those of purpura appear on the face; the patient complains of lethargy, giddiness, and imperfect vision; and if epileptic convulsions follow, little hope of recovery can be entertained. In the gangrenous form extreme lassitude is accompanied with feverish disturbance. Then the extremities lose warmth and sensibility, and gangrene soon takes place.

The treatment consists in substituting wholesome and easily digested food for the poisonous flour; administering opiates to relieve the pain; purifying the blood with chlorate of potash; and improving the general system with tonics.

Petechiæ are spots of a dusky crimson or purple colour, with a well-marked outline, and unaffected by pressure, resulting from a minute extravasation of blood, and generally occurring on the back, at the bend of the elbow, and in the groin. Petechial fever bears a close resemblance to typhus, and has always been attended with severe mortality.

THE GREAT PLAGUE.

The Plague is one of those mysterious diseases which, alike in origin and treatment, perplex and defeat the physician. Its contagious nature now-a-days is seldom disputed, though the best authorities admit that it may also be spontaneously engendered by endemic or epidemic influences. But what it is, no one can say, except that a poison, the qualities or

elements of which defy all chemical analysis and microscopical examination, is absorbed in the blood, and immediately, or in a very short time, changes its composition and the condition of the tissues. Little is possible in the way of curing any of its victims, unless their natural strength carries them through the attack. Friction with olive oil has been recommended, though it seems more useful as a prophylactic than as a curative. The patient must be removed at once from the source of the disease, and exposed freely to fresh air; the secretions duly regulated, and every effort made to maintain the strength. But "prevention" is the physician's sheet-anchor; and this consists in enforcing personal habits of the most rigorous cleanliness; cold water ablutions, copious in degree and frequent in application; abstemiousness in diet; freedom from excitement; and a constant supply of fresh air.

It is a curious but indisputable fact, that the plague is unknown in tropical countries. In northern climates it is subdued by the influence of winter. Its most fatal months are August, September, and October; and the region which it principally ravages is the basin of the Mediterranean. It visited Western Europe in the fifteenth, sixteenth, and seventeenth centuries; but it has not been known in England since 1665, nor in France since 1720. In our own days it finds its victims chiefly in Egypt, Syria, Greece, Anatolia, and Turkey; but occasionally reaches to Russia in the north, and to Malta in the west.

The principal visitations of the plague in England—or of pestilences not distinguished from it—have occurred as follows:—

In 430, when the mortality was so great that the survivors were scarcely sufficient in number to bury the dead.

In 962, thousands perished in London.

In 1094 and 1111, in London. In the latter year it attacked cattle, fowls, and other domestic animals.

In 1348-9, the plague, or Black Death, devastated western and southern Europe with terrible violence. This we have already described at length.

In 1361-2, 1367, and 1369, London and some parts of England were visited.

In 1407, 30,000 persons perished in London.

In 1471, the plague was severe at Oxford.

In 1478, it swept over England, and destroyed more people than had fallen in the sanguinary wars of the preceding fifteen years.

In 1499-1500, it was so dreadful in character that Henry VII. and his Court removed to Calais.

In 1603-4, 30,578 persons perished in London alone.

In 1625, the mortality in London amounted to 35,417 persons.

In 1630 the plague reappeared. Its presence stimulated the Privy Council to extraordinary activity. Magistrates were ordered to prohibit the passage of rogues and vagabonds who might spread the infection. Houses into which the disease had already made its way were to be closed. In London an attempt was made to prevent the constant influx of population to the city. No new rooms were to be built under a certain height, nor houses with upper storeys overhanging the streets. Householders were ordered to forbear from taking lodgers; for "overcrowding" was as great an evil in the reign of Charles I. as it is in that of Victoria. In 1633, the College of Physicians published a report, in which the increase of building—"by which multitudes of people are drawn hither to inhabit, by which means both the air is much offended and provision is made more scarce"—is specified as a principal cause of the plague. The report adds a list of nuisances that required abatement:—"The sewers and ditches were not properly cleansed. Ponds which should have been filled up were left to collect refuse. The streets were not swept

as they should be. Lay stalls were allowed to remain close to the habitations of man. Those who died of the plague were buried within the City, and some of the graveyards were so full that partially decomposed bodies were taken up to make room for fresh interments. Corn, meat, and fish unfit for consumption were sold to the poor." The physicians recommended the erection of a Health Office, but the recommendation was never carried out.

The Great Plague of London began in December, 1664.

Before we attempt a description of this memorable visitation, it will be convenient to indicate the principal symptoms of the disease. The patient is, in the first place, sensible of great weariness and fatigue, with slight shivers, nausea and vomiting, confusion of ideas, vertiginous attacks, and pain in the loins. As the disease makes its way, he feels the mental disturbance greatly increased, occasional stupor and delirium come on; the face is alternately flushed and pallid, and a feeling of intense constriction is experienced in the region of the heart. Darting pains shoot to and fro in the groins, the arm-pits, and other parts of the body; and these are soon followed by enlargements of the lymphatic glands, called *buboes* (which, however, in some cases do not make their appearance at all), and by the formation of carbuncles on various parts of the body. About the third day, the tongue becomes dry and brown, and a dark fur overspreads the gums, the teeth, the lips; the excretions are offensive; the muscular system ceases to obey the will; livid patches and dark stripes (owing to the extravasated blood) appear on the skin. Finally, the pulse sinks; the surface of the body grows cold and clammy: delirium or coma seizes its victim, and in five or six days—sometimes in two or three—the painful struggle is at an end.

The appearance of the Great Plague of London is thus de-

scribed :—"Towards the close of the year 1664, two or three persons died suddenly, attended with symptoms that plainly manifested the nature of the disease; hereupon some timid neighbours moved into the city, and unfortunately carried the contagion with them; and, for want of confining the persons who were first seized, the whole city was, in a little time, irrecoverably infected. As soon as it was announced that the plague was in the city, it was impossible to relate what accounts were spread of its fatality—every one predicted its future devastations, and terrified each other with remembrances of a former pestilence. It seems quite ascertained, that it was imported into London by goods from Holland, brought thither from the Levant, and first broke out in a house in Long Aere, near the end of Drury Lane, where those goods were carried, and first opened; two Frenchmen dying, the family endeavoured to conceal it, but it spread from that house to others, by the unwary communication with those who were sick, and infected the parish officers who were employed about the dead; it went on, and proceeded from person to person, from house to house.

"In the first house that was infected there died four persons; a neighbour hearing that the mistress of the house was ill, visited her, and carried home the distemper to her family, and died, with all her household. A minister, called to pray with the first sick person in the second house, was said to sicken and die immediately, with several more in his family. A Frenchman, who lived near the infected houses, removed, for fear of the distemper, into Bearbinder Lane, and died, to the great affliction of the city. Then the physicians began to deliberate, for they did not at first imagine it to be a general contagion; but the Secretaries of State got notice of it, and ordered two physicians and a surgeon to inspect the bodyes, who assured the people that it was neither more nor less than the plague, with all its terrifying particulars; and

that it threatened an universal infection, so many people having already conversed with the sick or distempered, and having, as might be supposed, received infection from them, that it might be impossible to put a stop to it. This filled people's heads so, that few cared to go through Drury Lane.

"As soon as the magistraey, to whom the public care belonged, saw how the contagion daily increased, and had now extended itself to several parishes, an order was immediately issued out to shut up all the infected houses, that neither relations nor acquaintance might unwarily receive it from them; and to keep the infected from carrying it about with them.

"Terror and apprehension now led the multitude into a thousand weak and absurd things, which there wanted not persons wicked enough to encourage: people were soon running about to fortune-tellers, cunning men, and astrologers, to have their nativities east, and to know their fortunes. This folly made the town swarm with wicked pretenders to magic and the black art; it became common for them to have signs with inscriptions—*Here liveth an astrologer—Friar Bacon's head—Mother Shipton—a Merlin*, or the like; in short, the usual signs of these impostors were to be seen in almost every street. One great mischief was, if these deluders were asked if there would be a plague, they all agreed to answer, yes; for that maintained their trade: had the people not been kept in a fright, the wizards would have been rendered useless, and their craft at an end; but they always talked of the influences of stars and conjunctions of planets, which must, necessarily, bring sickness, distempers, and the plague. Saturn and Jupiter had been observed in conjunction, in Sagittarius, on the 10th of October; and Saturn and Mars also, in the same sign, on the 12th of November! There was no remedy for this horrid delusion, till the Plague put an end to it, by clearing the town of most of these moek calculators.

“Before this happened, many of the people, given up to prophecies, dreams, and old wives’ tales, became so enthusiastically bold as to run about the streets with their oral predictions, pretending that they were sent to preach to the city; one, like Jonah at Nineveh, cried in the streets—‘Yet forty days, and London shall be destroyed;’ another ran about naked, except a pair of drawers about his waist, crying, day night (like a man mentioned by Josephus, before the destruction of Jerusalem), ‘Oh! the great and terrible God!’ and said no more, but repeated these words continually, with a voice and countenance full of horror, a swift pace; and nobody could observe him to stop, or rest, or take any sustenance, nor would he enter into speech with anyone.”

The first official notice of the terrible visitation seems to have been an Order in Council, dated April 26th, 1665, announcing that it had broken out in the parish of St. Giles’s-in-the-Fields, and directing certain measures to be taken for arresting its progress. In Pepys’ Diary, under the date of April 30th, we get a glimpse of the coming horror: “Great fears of the sickness here in the city, it being said that two or three houses are already shut up. God preserve us all!” The precautions taken were utterly ineffective; and the pestilence made its way into the city proper. People then began to hurry into the country while there was yet time to escape; for, as soon as the infection became general, a strict cordon was drawn round the plague-stricken capital, to prevent the disease from being carried into the provinces. In July the King fled with his Court, and took refuge in Salisbury, leaving London in charge of Monk, Duke of Albemarle. A deep sense of despair then settled down upon the inhabitants, whose gloom was increased by the restrictions imposed upon neighbourly relations, and even upon the intercourse of families. A red cross and the pitiful legend, “Lord, have mercy upon us!” were branded on the door of every house in

which the fatal disease had shown itself; and thenceforward that house was cut off, as it were, from the outer world. Some of the citizens converted their dwellings into fortresses, provisioned and guarded against the plague as against a foreign foe. From a wicket in the gate or an upper window, they conducted their communications with the few people who sought them, lowering ropes with buckets or baskets attached to receive letters or supplies, which were carefully fumigated before they were taken inside. At night the carts rattled through the silent streets to collect the bodies of the dead, and convey them to the pits, into which they were huddled without the sacred offices of the Church. Trade and commerce almost entirely ceased their operations; and the horror of the time was augmented by the growing scarcity of provisions. The selfishness which lurks at the bottom of our humanity now raised up its hydra-head without let or hindrance, for fear had triumphed over all social conventionalities, and no man hesitated to show himself without mask or disguise. The sick were left to suffer and die unattended; a suspected house was shunned even by the ministers of religion. "London," says Defoe, "might well be said to be all in tears; the mourners did not go about the streets, indeed, for nobody put on black, or made a formal dress of mourning for their dearest friends; but the voice of mourning was truly heard in the streets; the shrieks of women and children at the windows and doors of their houses, where their nearest relatives were perhaps dying, or just dead, were so frequent to be heard as we passed the streets, that it was enough to pierce the stoutest heart in the world to hear them. Tears and lamentations were seen in almost every house, especially in the first part of the visitation, for towards the latter end men's hearts were hardened, and death was so always before their eyes, that they did not so much concern themselves for the loss of their friends, expecting that themselves should be summoned the next hour."

It was natural enough that the compulsory shutting up of infected houses should provoke bitter remonstrances from their inmates, who thus saw themselves exposed to a melancholy fate. The captivity was so intolerable that many attempted to effect their escape, either by violence or stratagem. In these reckless attempts several watchmen were killed, others wounded and left for dead, when they offered resistance to the fugitives. As many houses had more than one mode of exit, a single watchman could not guard them all, and ingenious were the devices by which his vigilance was evaded or his attention diverted by those who longed for freedom.

From Coleman Street branched off numerous alleys. An infected house was shut up in White's Alley: it had a window into another court that opened upon Bell Alley. Watchmen were posted at the door of the house night and day, but one evening the family slipped out at the window, and the poor fellows kept watch and ward over the empty house for nearly a fortnight. Near the same place a watchman was blown up with gunpowder, and most severely scorched and burned. While he rent the welkin with cries of agony, and none durst venture to his assistance, those of the inmates of the house who were able to move got out of the window of the first floor, leaving two plague-stricken wretches in their beds, to whom nurses were afterwards sent.

"A watchman had kept his post two nights at a shut-up house, and the day-watch during one day: the day-watch was come again to his duty: all this while no noise was heard, no light was seen, nothing was called for, nor the watchmen sent on any errands (which was their principal business): one night the dead cart was stopped there, and a maidservant put into it, wrapped only in a green rug; next day the watch heard a great crying and screaming, occasioned, as was supposed, by some of the family just dying. Tho watchman knocked at the door, but none answered a great while, when one looked

out and said (with an angry quick tone, yet with a voice that was crying), 'What d'ye want, that ye make such a noise?' He answered, 'I am the watchman, how do you do? What is the matter?' The person answered, 'What is that to you? *Stop the dead cart.*' The cart was stopped, and they knocked again; nobody answered, and the cart-man would not tarry. When the day-watchman came, they knocked again a great while; none answered: the casement being open at which the person looked out, they procured a ladder, and found a dead woman on the floor, covered only with her shift. A magistrate ordered the house to be broken open, wherein were none found but the dead sister to the mistress of the family; the master, his wife, several children and servants, escaped at some back door, or over the tops of houses; whether sick or sound was not known."

A few extracts from Pepys' Diary—the evidence of an eye-witness and a contemporary—will set before us in lurid light some ghastly aspects of this terrible visitation:—

"*August 8th.*—Died this week in London, 4000."

"*August 13th.*—There perished this week 5000."

On the 3rd of this month he went on a visit to Deptford, and met Lord Crewe returning to the town. The journey was shortened by a Mr. Mann's narrative of a maid-servant in the family of Mr. John Wright, living thereabout, who, having fallen sick of the plague, was removed to an out-house, and put in charge of a nurse, but during the latter's absence got out at the window and ran away. "The nurse coming and knocking, and, having no answer, believed she was dead, and went and told Mr. Wright so; who and his lady were in a great strait what to do to get her buried. At last, resolved to go to Burntwood [Brentwood] hard by, being in the parish, and there get people to do it. But they would not, so he went home full of trouble, and in the way met the wench walking over the common, which frightened him worse than before: and

was forced to send people to take her, which he did ; and they got one of the pest-coaches, and put her into it, to carry her to a pest-house. And, passing, in a narrow lane, Sir Anthouy Browne, with his brother and some friends in the coach, met this coach with the curtains drawn close. The brother, being a young man, and believing there might be some lady in it that would not be seen, and the way being narrow, he thrust his head out of his own into her coach, and to look, and there saw somebody looking very ill, and in a silk dress, and stunk mightily."

It is difficult to conceive of a grimmer picture than this.

On another August evening he went from Brentford to Queenhithe. "I could not get my waterman to go elsewhere," he writes, "for fear of the plague. Thence with a lanthorn, in great fear of meeting of dead corpses, carrying to be buried ; but, blessed be God, met none, but did see now and then a link, which is the mark of them, at a distance."

He took a walk to Greenwich. "In my way seeing a coffin with a dead body therein, dead of the plague, lying in an open close belonging to Coombe Farm, which was carried out last night, and the parish have not appointed any body to bury it ; but only set a watch there all day and night, that nobody should go thither or come thence: this disease making us more hard to one another than we are to dogs."

On the 30th August he writes:—"Lord ! how everybody's looks and discourse in the street is of death, and nothing else ; and few people going up and down, that the town is like a place distressed and forsaken." And on the 31st: "In the City died this week 7496, and of them 6102 of the plague. But it is found that the true number of the dead this week is near 10,000 ; partly from the poor that cannot be taken notice of through the greatness of the number, and partly from the Quakers and others that will not have any bell ring for them."

The Rev. Thomas Vincent, one of the Nonconforming ministers who bravely remained in the plague-stricken city, thus describes its miserable condition at this time :—

“Now people fall as thick,” he says, “as the leaves in autumn when they are shaken by a mighty wind. Now there is a dismal solitude in London Streets; every day looks with the face of a Sabbath day, observed with a greater solemnity than it used to be in the city. Now shops are shut in, people rare and very few that walk about, insomuch that the grass begins to spring up in some places, and a deep silence in every place, especially within the walls. No prancing horses, no rattling coaches, no calling in customers nor offering wares, no London cries sounding in the ears. If any voice be heard, it is the groans of dying persons breathing forth their last, and the funeral knells of them that are ready to be carried to their graves. Now shutting up of visited houses (there being so many) is at an end, and most of the well are mingled among the sick, which otherwise would have got no help. Now, in some places, where the people did generally stay, not one house in a hundred but what is affected, and in many houses half the family is swept away; in some, from the eldest to the youngest: few escape but with the death of one or two. Never did so many husbands and wives die together; never did so many parents carry their children with them to the grave, and go together into the same house under earth who had lived together in the same house upon it. Now the nights are too short to bury the dead: the whole day, though at so great a length, is hardly sufficient to light the dead that fall thereon into their graves.”

London was virtually put into quarantine by the alarmed country people, who, at a distance of even forty and fifty miles, were afraid to purchase anything that came from its marts, or to allow any of its inhabitants to enter their houses. And in the capital itself, the most painful precautions

attended every business transaction. "When anyone bought a joint of meat in the market, they would not take it out of the butcher's hand, but took it off the hooks themselves. On the other hand, the butcher would not touch the money, but have it put into a pot full of vinegar, which he kept for that purpose. The buyer carried always small money, to make up any odd sum, that they might take no change. They carried bottles for scents and perfumes in their hands, and all the means that could be used were employed; but then the poor could not do even these things, and they went on at all hazards." The grotesque mingled with the terrible, as it always does, and quacks found ready customers for the "only true plague-water" and the "infallible preventive pills." It is painful to relate that, at this great crisis, the national clergy failed to do their duty. "Most of the conformable ministers fled," says Baxter, "leaving their flocks in the hour of most urgent need." It was only the nonconforming clergy who remained at the post of danger, which was also the post of honour; who went, in defiance of an unjust and oppressive law, into the forsaken pulpits, visited the sick, and relieved the oppressed. The same craven regard for their own safety was shown by the fashionable physicians, though it is true that against this dreadful pestilence the Healing Art was practically powerless. Sanitary Science was then so little understood that no effectual preventive measures were suggested, nor any steps taken to exterminate the pestilence by extirpating its seeds, and sweeping away the conditions under which they germinated.

The plague was at its height in the months of August and September. The King commanded the College of Physicians to prepare a series of rules and regulations in English that might serve as a directory or manual for general use; and some of its members, specially selected, were appointed under the supervision of two of the aldermen, to attend the infected

on all occasions. By order of the Lord Mayor, on the 6th of September, great fires were kindled in all the streets and open places, and continued for three nights and days in order to purify the air. Every six houses on each side of the way were assessed towards the expense of their maintenance; but heavy rain fell and extinguished them, while the doctors were still disputing whether the practice was salutary or injurious. The day after its failure, John Evelyn noted in his *Kalendarium*—

“*September 7th.*—Near 10,000 now died weekly; however, I went all along the city and suburbs, from Kent Street to St. James’s, a dismal passage, and dangerous to see so many coffins exposed in the streets; the streets thin of people, the shops shut up, and all in mournful silence, as not knowing whose turn might be next.”

As Dryden has it—

“ Within the walls,
The most frequented once and noisy parts
Of town, now midnight silence reigns e’en there !
A midnight silence at the noon of day—
And grass, untrodden, springs beneath the feet ! ”

As the colder weather came on, the plague diminished its intensity, and with each week’s decline of the death total, the people regained their confidence. A few shops were gradually opened. Fugitives returned to their homes. Inter-course with the outer world resumed its former conditions. The King and Court, who had done nothing to reassure the unfortunate citizens, reappeared. In the first week of March, 1666, deaths by the plague had decreased to forty-two; and by the end of the month it was almost extinct, after carrying off nearly a hundred thousand victims.

CHAPTER VII.

THE ALCHEMISTS AND CHEMISTRY.

IN sketching, however lightly and briefly, the history of the Healing Art, it is impossible to ignore the indirect connection with it, in mediæval times, of Alchemy and Rosicrucianism. The mediæval physicians were generally alchemists also, and some of them were eager students of the Rosicrucian mysteries. Alchemical science, like their knowledge of the art of medicine, they derived from Arabian sources, just as they did both Astronomy and its illegitimate sister Astrology. One of the earliest of their teachers was ABU MOUSSA DJAFAR (or GEBER), surnamed "the Wise" (Al Sofi), who was born at Houran, in Mesopotamia, and flourished in the middle of the eighth century. He was a man of unwearied industry, conversant with all the knowledge of his age, and an enthusiastic believer in the elixir of life and the philosopher's stone. He taught that the *aurum potabile*, or liquid preparation of gold, would cure every disease of men, animals, or plants; and he asserted that all the metals were diseased, with the single exception of gold. Lord Bacon distinguishes him as "the master of masters;" Jerome Cardan, as one of the twelve great master-minds of the world. He was certainly one of the patriarchs of Chemical Science, and we owe to him the discovery of potash of soda and its carbonates, saltpetre (which he was the first to mention),* corrosive sublimate, red

* THOMSON, *History of Chemistry*, i. 24.

oxide of mercury, nitric acid,* and nitrate of silver. His principal writings were translated into English by Richard Runde in 1678, and consist of four parts:—1st, "Of the Investigation or Search for Perfection;" 2nd, "Of the Sum of Perfection, or of the Perfect Magistery;" 3rd, "Of the Invention of Verity or Perfection;" and 4th, "Of Furnaces." The drift of all his labour was the method of making the philosopher's stone; and he describes with a good deal of minuteness the substances he employed, the processes he followed, and the results he obtained. He held that all metals are compounds of mercury and sulphur. He was acquainted, it would seem, with gold, silver, copper, iron, tin, and lead, which he respectively named Sol, Luna, Venus, Mars, Jupiter, and Saturn. The first two he called perfect metals; the others, imperfect, the difference depending on the proportions in which the mercury and sulphur combined, and the extent to which they were impure. Gold he described as mercury mixed with a small quantity of pure red sulphur; silver, as mercury mixed with pure white sulphur; iron, as a compound of earthy mercury and earthy sulphur; and so on. Hence he concluded that all metals could be transmuted into gold or silver by altering the proportions of their constituents, mercury and sulphur.

About the end of the ninth century flourished Alfarabi or Alfarabius, a native of Farab, in Transoxiana. His real name was Mohammed; but in the history of science he is known by an alias borrowed from his birthplace. According to the measure of his time he was an excellent scholar, and thoroughly conversant with the Greek as well as the Arabian systems of philosophy. In knowledge of the secrets of Alchemy he was reputed to be inferior only to Galen.

It was not until the early part of the twelfth century that Alchemy made a permanent impression on the European

* Geber calls it "dissolving water."

mind. Eager inquirers then began those researches *de naturâ rerum* which have developed, in the course of seven centuries, into the science of Chemistry as it now is. No doubt, by the majority, the object kept in view was the philosopher's stone, the substratum, substance, or amalgam, which was to transmute all metals into gold by cleansing them of their impurities; but the loftier minds, if glancing at this object incidentally, cherished a loftier purpose—the discovery of the simple elements of which all bodies are composed. To this end were directed the labours of ALBERTUS MAGNUS, Albertus Teutonicus, Frater Albertus de Colonia, or Albertus Grotus, as he was variously called—a man of extraordinary intellectual fecundity, who has sometimes been designated (and not unjustly) the founder of the Schoolmen, whose almost incredible industry and comprehensive intelligence] contrived to assimilate all the physical knowledge that previous to his time had been accumulated.

He came of the family of the Counts of Ballstadt, and was born at Lawingen, on the Danube, in 1193, or, according to some authorities, in 1205; but, in truth, his birthplace and the date of his birth are mere conjectures. We know nothing certain about him until we find him, in his youth, a student at the University of Padua, where he gained distinction by his extraordinary attainments. He was still a young man, when, about 1222, he was appointed to the Chair of Theology at Padua, and joined the Dominican order. He did not long retain the professorship, but taught with great success in Ratisbon, in Cologne, in Strasburg, and in Paris, where he resided for three years, accompanied by his illustrious disciple, Thomas Aquinas. In 1260 he accepted the bishopric of Ratisbon, but finding that the episcopal duties interfered too much with his studies, and were uncongenial to his tastes, he resigned his see into the Pope's hands, and retired to a convent at Cologne. How long he remained in monastic shades

is uncertain ; but in 1270 we find him preaching a crusade in Austria and Bohemia, and in 1273 he was at Paris defending Thomas Aquinas. He died in 1280, leaving behind him, as a contribution to the world's library, twenty-one ponderous folio volumes, including Commentaries on Aristotle, on the Scriptures, and on Dionysius the Areopagite ; an exposition of Peter the Lombard's "Book of Sentences," a "Summa Theologiæ," a "Summa de Creaturis," a treatise on the Virgin, and his Opuscula, or Minor Works, which include a treatise on Alchemy.

His chymical and alchemical experiments invested him in the eyes of the vulgar with a halo of supernatural power. It was thought that he could change even the course of the seasons. Thus runs the story : He sought in the neighbourhood of Cologne a piece of ground peculiarly eligible as a site for a monastery. It belonged to William Count of Holland and the King of the Romans, neither of whom showed any willingness to dispose of it. Albertus therefore invited the Count, as he passed through Cologne with his train, to a magnificent banquet. They accepted it, and proceeded to the philosopher's residence. It was mid-winter, and so intense a frost that the knights could not sit on horseback without incurring the risk of frozen feet. Great was their surprise, therefore, on arriving at the philosopher's house, to find the repast spread in the garden, where the snow-drifts were lying several feet deep ; and the Earl, in a tempest of wrath, remounted his horse, and was preparing to ride away. After much dignified insistence, Albert prevailed on the Count to stay. Immediately, the sun shone forth with all the glow of its summer splendour—the dark clouds drifted down below the horizon—a genial breeze awoke—the snow, the rime, and the ice disappeared—the trees smiled freshly in their foliage—and the song-birds filled the air with music. The Count and his followers marvelled much ; and when the repast was ended, the

prince granted to Albert the coveted site for his convont. Then, to show the full extent of his magical power, he gave the signal for another change, and the sky became dark as pitch, the sun concealed its orb, the snow fell heavily, the leaves withered on the blackened boughs, and the winter-cold was so keen and painful, that the guests hastily donned their long martial cloaks, and retreated into the house to warm themselves before the colossal fire in the philosopher's kitchen.

One of the famous schoolmen of the twelfth century was ALAIN DE LISLE, or Alanus de Insulis, who, according to tradition, discovered the *elixir vitæ*, and thus, when on the point of death at the age of fifty, was enabled to prolong his life another sixty years. Why he did not indulge in a still longer span, tradition fails to explain. His knowledge was so wide, deep, and various that he was called "the Universal Doctor." He became one of the monks of Citeau, where he died in 1298, aged about 110 years. He wrote a Commentary on the Prophecies of Merlin, with several other works.

A contemporary writer of the encyclopædic school was Vincent de Beauvais, who, before the middle of the thirteenth century, compiled his stupendous "*Speculum Naturale, Morale, Doctrinale et Historiale*." The first part, or *Speculum Naturale*, is a multifarious account of the heavens and the earth, animals and plants, the body and mind of men, gathered from a vast variety of sources. The second is a compilation from Thomas Aquinas and other theologians. In the third part, the *Speculum Doctrinale*, all the known arts and sciences are explained; and the fourth is a kind of Universal History. Taken as a whole, the work is remarkable for its immense learning and orderly arrangement; and not less so for the impartiality with which it admits fact and fiction. There is an absolute want of discriminative criticism.

A recipe for the prolongation of life, set forth by Harcourt, in his credulous and fantastic History of Persons who in Old

Ago have been Rejuvenated, is ascribed to Arnold de Villeneuve, who, however, as he did not attain even the Psalmist's span of threescore and ten, cannot have had sufficient faith in its efficacy to apply it personally. The individual desirous of long life must rub himself thoroughly, twice or thrice a week, with the marrow of cassia. Every night, upon going to bed, he must put over his heart a plaster, composed of a certain quantity of Oriental saffron, red rose-leaves, sandal-wood, aloes, and amber, liquefied in oil of roses and the best white wax. This must be removed in the morning, and kept during the day in a leaden box. Let him take, and place in a court where the air and water are pure, sixteen chickens, if he be of sanguine temperament; twenty-five, if phlegmatic; and thirty, if melancholy. Upon these he is to feed, eating one a day; but they are first to be fattened in such a manner as to impregnate their flesh with the qualities which will ensure longevity in the eater. Being kept without food until they are almost starved, they are to be fed upon a broth made of serpents and vinegar, thickened with wheat and bran. When they have been dieted on this gruesome mixture for two months, they may be served up at table, and digested with the assistance of a moderate quantity of good white wine or claret. Whosoever follows this regimen every seven years may attain a longevity almost equal to that of the Wandering Jew.

ARNOLD DE VILLENEUVE, to whom this grotesque formula has, perhaps, been erroneously given, was born in 1245, and died in the first year of the fourteenth century. He studied medicine at the University of Paris with exceptional distinction; and then travelled for twenty years in Italy and Germany, "interviewing" the most celebrated scholars of the time, and forming a close intimacy with Pietro d'Apone (or Abone), whose tastes and pursuits were akin to his own. He acquired a high reputation as a physician, and was thought in this capacity to surpass all his contemporaries. His restless intellect

took up the study of alchemy and astrology, and with such success that common report declared he made immenso quantities of gold from lead and copper. In company with his friend Abone he was accused of sorcery; but he contrived to escape from Italy, and find safety in France—more fortunate than his friend, who was thrown into prison, where he died after enduring great torture. Arnold's great work on "The Practice of Medicine" is lost.

Among the alchemists one of the most illustrious names is that of RAYMOND LULLI.

He came of a noble Catalonian family, and was born in the island of Majorca in 1235. Having married at an early age, he then passed over into Spain to enjoy its larger and freer life. The King made him Grand Seneschal, and for some years he was foremost in the gaities of the Court. A painful incident (it is said) led to his sudden abandonment of his career of dissipation, and dividing his fortune, one half to his wife and children and one half to the poor, he dedicated himself to the service of God, and took a solemn vow to devote the rest of his life to the conversion of the Mohammedans to the Christian religion. In his dreams he had a vision of the Saviour who pointed to his wounded side, and said, "Raymond! Raymond! follow me!" The dream having been thrice repeated, Lulli accepted it as a celestial intimation. He set out on a pilgrimage to the famous shrine of St. Iago of Compostella, and afterwards lived for ten years as an anchorite among the mountain solitudes of Aranda.

When he was about forty years old, Lulli returned to active life; founded a College for the study of Arabic; and visited Paris, where he made the acquaintance of Arnold de Villeneuve. It was at this time that his imagination was kindled with the idea of discovering the philosopher's stone, which seemed to elude the eager grasp of the curious as surely as did the Sangrael. Thenceforth Alchemy wooed him with

greater success than theology, and he gave more time to alembic and crucible than to the commentaries of the schoolmen. His crusade against Mohammedanism, however, was not relinquished, and he went to Tunis with the view of beginning the work of conversion; but was arrested, thrown into prison, and escaped death only by promising at once to quit the African shore, and never again to set foot upon it. Not particularly coveting the honour of martyrdom, he gave the required promise with alacrity, sailed for Italy, and proceeded to Milan, where he devoted his time, labour, and fortune to the practice of Alchemy.

There seems reason to believe that Raymond Lulli visited England about 1312, on the invitation of Edward II., and was employed there in refining gold and coining rose nobles. Afterwards we find him at Rome, urging upon the Pope the adoption of some of the projects conceived by his fertile brain; such as the introduction of the study of the Oriental languages into the European monasteries—the union of the military orders of knighthood into one confederacy to make more effective war upon the Saracens—and the prohibition of the works of Averroës, which he considered injurious to the cause of Christianity. He received small encouragement from the Pontiff; and greatly disappointed, made his way once more to Africa, in spite of his pledged word, in order to preach the Gospel of Christ. He landed at Bona in 1314, and so aroused the ire of the Moslem that they fell upon him with a shower of stones, and left him for dead on the sea-beach. There he was found by some Genoese merchants, who carried him, speechless but still breathing, on board their vessel, which was bound for Majorca. He did not live to see his native shores, and his remains were interred in the Church of St. Eulalia at Palma.

His writings comprise nearly five hundred volumes, and deal with almost every subject which was then of interest—

medicine, chemistry, astronomy, physics, civil and canon law, metaphysics, politics, theology, grammar, rhetoric, and morals. He was one of the honestest as well as one of the most persevering of the alchemists; though he has the audacity to pretend (in his "Testamentum") that he at one time converted no less than 50,000 lbs. weight of quicksilver, lead, and pewter into gold.

Jean de Meung is also included among the alchemists; but he left to posterity something much more valuable than any recipe for making gold would have been, in his famous poem of the "*Roman de la Rose*." In the early part of the fourteenth century was born NICHOLAS FLAMEL, the author of "The Philosophic Summary," and of an alchemic allegory, "*Le Désir désiré*." He devoted a long life to the delusions of the Philosopher's Stone, the Elixir Vitæ, and the universal Alkahest, but it is difficult to determine how far he was self-deluded, or how far he was a conscious impostor. Some of the stories told of him by Lenglet du Fresnoy may be the inventions of a later period; or else we must credit him with audacious knavery, if he really professed to have discovered both the secret of boundless wealth and the secret of prolonging life. And what shall we say of the dupes who believed him? According to a very romantic tale, he bought for a couple of florins an old and singular book, written not upon parchment, but upon the bark of trees—the former would have been too commonplace a material—consisting of three times seven leaves. Each seventh leaf was adorned by an allegorical illustration: the first represented a serpent swallowing rods; the second, a cross with a serpent crucified; and the third, a desert in which was a fountain, with serpents creeping all around it. The author of this strange volume was no less illustrious a personage than "Abraham, Patriarch, Jew, Punic, Philosopher, Priest, Levite, and Astrologer," who, as it was written in Latin, must have had a miraculous

fore-knowledgo of the tongue of the ancient Romans. A perusal of its mystic pages convinced Flamel that it was a complete manual on the art of transmutation of metals. The necessary vessels were indicated, and the processes described. But, unhappily, it supposed the reader to be in possession of the one all-important ingredient—the transmuting agent—that is, the philosopher's stone.

Further study showed him that the secret of the stone was embodied in certain allegorical drawings on the fourth and fifth leaves, but, then, he could make neither head nor tail of them; no more could any of the professors of alchemy and the learned men whom he invited to examine them—some of whom were so rudely candid as to laugh at Abraham's production as worthless gibberish. Flamel, however, adhered to his conviction of the inestimable value of his discovery, and day after day pored fondly over the mysterious designs, which were as follow:—On the first page of leaf four, a picture of Mercury contending with an aged man, who might be either Saturn or Time—more probably the latter, as he carried the emblematical hour-glass on his head, and the equally emblematic scythe in his hand. On the second page might be seen a flower upon a mountain top, with a blue stalk, blossoms of red and white, and leaves of pure gold. The wind was dealing with it roughly, and around it was a throng of dragons and griffins. On the first page of leaf five was represented a beautiful garden, with a rose tree in full bloom in the midst of it, leaning against the trunk of a venerable oak. At the foot of the oak flowed a spring of milk-white water, which meandered through the garden, and disappeared amid the sands. On the second page, a king, sword in hand, was watching the massacre by his soldiers of a number of young children, whom they brutally tore from the agonizing embrace of their mothers. Some of the soldiers were collecting the children's blood in a large vessel, in which two

allegorical figures of the sun and moon were bathing themselves.

Having wasted the leisure time of one-and-twenty years upon the study of these pictures, Flamel, at the instigation of his wife, set out for Spain to seek the assistance of some learned Jewish rabbi. After wandering to and fro for a couple of years, he met at Leon with a learned Hebrew physician, named Cauches, who agreed to return with him to Paris to examine the precious volume. Cauches proved to be past master of the secrets of Alchemy, and on the way entertained the eagerly-listening Flamel with his brilliant expositions. Unfortunately, when they reached Orleans, he was seized with an illness which, in spite of all Flamel's anxious attentions and skill in medicine, carried him off; and Flamel returned to Paris penniless and alone. He then resumed his study of Abraham's composition, but for two years could find no clue to its interpretation. In the third year, recollecting some hitherto forgotten utterances of his friend the rabbi, he perceived that all his previous experiments had been made in a wrong direction. He pursued them in the new light that had happily shone upon him, and in a few months success crowned his unwearied labours. On the 13th of January, 1382, he converted mercury into silver; and on the 25th of April—who can doubt the fact when the dates are thus particularly given?—converted mercury into gold. His was the prize which generations of alchemists had sought unweariedly, but in vain.

At this time Nicholas Flamel was about eighty years old. His disciples assert that he also discovered the elixir of life, and was enabled to defy disease and decay for a quarter of a century, dying at the age of one hundred and sixteen, in 1415. Why did he die at all? He might have lived on into this present century, and from the stores of his knowledge and experience, have enlightened us upon a good many

matters of which we are now in ignorance. By consenting to die, it is clear that he inflicted a great wrong upon posterity ! However, he went over to the majority at last, bequeathing his immense fortune to churches and hospitals, and thus making of his wealth a better use after death than he had made of it in his lifetime. For the truth must be told—Nicholas Flamel was a miser, who lived in the most parsimonious fashion, while heaping up vast sums by the practice of usury. It is true enough that he *had* discovered the secret of the philosopher's stone ; it was embodied in three words, *Cent. per cent.* The French nobles and courtiers were always in want of money, and Flamel was always ready to lend it—for a consideration. That he dabbled in Alchemy is also true ; how far he made his alchemical pursuits a cloak for his usurious transactions we cannot know. But I suspect that Master Nicholas Flamel was much more of a knave than a fool.

The extent to which the brighter minds of Europe lent themselves to the alchemical delusion in the middle ages is astonishing. That in the pursuit of an elixir of life, which could confer on its possessor the awful boon of immortal youth, should be found a wonderful fascination, is not surprising ; but that men should have devoted years of labour to the acquisition of a secret which, if discovered, would have ceased to be of value—for if everything could have been turned into gold, its consequent abundance would have rendered it worthless—is almost beyond belief. Posterity, however, has no cause to regret the delusion, since it led to the discovery of many important truths in chemistry, and the general advance of physical science.

In England, the dreams of the alchemists met with no very extensive acceptance ; though, in 1455, Henry VI., by advice of his council and parliament, issued four patents in succession to certain knights, London citizens, chemists, monks, mass-

priests, and others, with leave and lincenso to attempt the discovery of the philosopher's stone, "to the great benefit of the realm, and the enabling of the king to pay all the debts of the Crown in real gold and silver." Prynne afterwards remarked upon the issue of this patent to ecclesiastics as well as laymen—with sly satire—that the king included them because they were "such good artists in transubstantiating bread and wine in the Eucharist, and, therefore, the more likely to be able to effect the transmutation of baser metals into better." Nothing came of the patents; and the practical good sense of Englishmen prevented the delusion from attaining to any large proportions. Alchemy was practised, it is true, but principally by quacks and cheats, who thrived upon the follies and superstitions of the common people. Of these men, Lord Lytton, in his "Last of the Barons," has presented the reader with a very fair and accurate type in his Friar Bungey. "In his youth," he says, "he had been an itinerant mountebank, or, as it was called, *tregetour*. He knew well all the curious tricks of juggling that then amazed the vulgar, and, we fear, are lost to the craft of our modern necromancers. He could clothe a wall with seeming vines that vanished as you approached; he could conjure up in his quiet cell the likeness of a castle manned with soldiers, or a forest tenanted by deer.* Besides these illusions, probably produced by more powerful magic-lanterns than are now used, the friar had stumbled upon the wondrous effects of animal magnetism,

* To these descriptions Chaucer alludes in "The Franklin's Tale":—

"For I am siker that there be sciencies
By which men maken divers apparences,
Swiche as these subtil tregetours play.
For oft at festes have I wel herd say
That tregetoures, within an hallè large,
Have made come in a water and a barge,
And in the hallè rowen up and down.
Sometimes hath semèd come a grim leoun,
And sometimes flourès spring as in a mede."

which was then unconsciously practised by the alchemists or cultivators of white or sacred magic. He was an adept in the craft of fortune-telling."

Among the more respectable English alchemists was George Ripley, Canon of Bridlington, who, in 1477, dedicated to King Edward IV. his once celebrated "Compound of Alehymy; or, The Twelve Gates leading to the Discovery of the Philosopher's Stone." These twelve gates were:—

1. Calcination.
2. Solution.
3. Separation.
4. Conjunction.
5. Putrefaction.
6. Congelation.
7. Cibation.
8. Sublimation.
9. Fermentation.
10. Exaltation.
11. Multiplication.
12. Projection,—

on each of which he has a good deal to say. Old age brought wisdom to him, and he confessed that he had spent his life in an empty pursuit; requesting all men when they met with any of his books—twenty-five in number—to commit them to the flames, inasmuch as they had not been founded upon facts, and were absolutely false and vain.

Bernard of Treves and Basil Valentine enjoyed in their day a great reputation. So did Trithemius; but we pass them with this brief allusion because they contributed nothing new either to Alchemy or Chemistry; and come to CORNELIUS AGRIPPA, who, though chiefly remembered by the legends of his magical skill, was not unentitled to a place among the Pioneers of Science. Hallam's account of him is

marked by less than that judicious historian's usual impartiality. He speaks of him as having drunk deep at the turbid streams of Cabbalistic philosophy, and characterizes his book on Oecult Philosophy as a rhapsody of wild theory and juggling falsehood. Yet it has surely an interest and a value as linking "the theosophy of Paracelsus and the later sects of Bohmenists with an oriental lore, venerable in some measure for its antiquity, and full of those aspirations of the soul to break her limits, and withdraw herself from the dominion of sense, which soothed, in old time, the reflecting hours of many a solitary sage on the Ganges and the Oxus." To me the work of Agrippa has a certain charm, because it is that of a man rising above the conventionalities and commonplaces of his age, and seeking to establish a link of communication between the everyday world and the world without; a man with many aspirations—not always wise or rational, perhaps, but always breathing a desire for things true and pure; a man whose mind was deeply concerned with the mysteries of life and nature. Such a man seems to me, in spite of errors of judgment, worthy of respect; and to listen to such a man's utterances cannot be wholly unprofitable.

"Agrippa, evidently the precursor of Paracelsus," says Hallam, "builds his pretended philosophy on the four Elements, by whose varying forces the phenomena of the world are chiefly produced; yet not altogether, since there are occult forces of greater efficacy than the elementary, and which are derived from the soul of the world, and from the influence of the stars. The mundane spirit actuates every being, but in different degrees, and gives life and form to each; form being derived from the ideas which the Deity has empowered his intelligent ministers, as it were by the use of his seal, to impress. A seal of being, that fundamental theorem of the emanative philosophy, connects the higher and lower orders of things, and hence arises the power of

Magic; for all things have, by their concatenation, a sympathy with those above and below them, as sound is propagated along a string. But besides these natural relations, which the occult philosophy brings to light, it teaches us also how to propitiate and influence the intelligences, mundane, angelic, or demoniacal, which people the universe. This is best done by fumigations with ingredients corresponding to their respective properties. They may now thus be subdued, and rendered subject to man. The demons are clothed with a material body, and attached to the different elements; they always speak Hebrew, as the oldest tongue. It would be trifling to give one moment's consideration to this gibberish, were it not evidently connected with superstitious absurdities, that enchained the mind of Europe for some generations. . . . The system of Cornelius Agrippa is the mere creed of magical imposture, on which Paracelsus, and still more Jacob Bohmen, grafted a sort of religious mysticism."

But the system of Cornelius Agrippa is also something more and better than this, as anyone can see who will undertake a careful examination of his writings, or will turn to the fair and full analysis of them furnished by Professor Morley in his "Life of Cornelius Agrippa." Mr. Hallam would seem to have formed his estimate upon the criticisms put forward by Brucker and Sprengel.

Heinrich Cornelius Agrippa was born at Cologne on the 14th of September, 1486. He came of an old and noble family, which had long enjoyed the favour of the princes of the House of Austria. He himself, while quite a youth, was employed as private secretary by the Emperor Maximilian, in which capacity he displayed precocious talents. He fought by the Emperor's side in his Italian campaigns, and well earned the honour of knighthood bestowed upon him. Thereafter he sought University distinction, and with great *éclat* took, at the age of twenty, the degrees of Doctor of Medicine and

Doctor of Laws. Already he was known to fame as a skilled alchemist; the adepts of Paris invited him to visit them, and give them the advantage of his advice and experience. He went to France, and from France to Spain, his reputation continually growing (*vires acquirit eundo*), and the world agreeing to accept him at his own valuation as foremost among living physicians, alchemists, theologians, and philosophers. In 1509 he delivered lectures on Hebrew and the Belles Lettres at the University of Dole, in France; but his quarrel with the monks, who suspected his orthodoxy, drove him from the town. To gratify Margaret of Austria he wrote a treatise on "The Excellence of Women." From fear of the monks, however, he did not print or publish it. Soon afterwards he spent some months in England, and was occupied in teaching Hebrew and calculating horoscopes for nearly a twelvemonth. Returning to Cologne, he gave lectures upon knotty points of theological casuistry, and then repaired to Italy to join the army of the Emperor Maximilian. At Pavia he lectured on the writings of Hermes Trismegistus, and having married a lady of noble family and gracious disposition, lived there happily until the clerical persecution made his situation intolerable. He lost his wife in 1521, and she was buried at Metz, where he resided for some time as syndic and advocate-general to the corporation. From this honourable office he was dismissed, first, because he opposed the popular notion and monkish doctrine that St. Anne had three husbands, and second, because he rescued from torture and death a poor woman falsely accused of witchcraft.

After a brief sojourn at Cologne, the harassed scholar removed with his family to Geneva; but failing to receive, as he had expected, a pension from the Duke of Savoy, he began to practise medicine at Friburg, in Switzerland; thence in the following year, he repaired to Lyons, and obtained a pension from Francis I. The Queen-mother—Louisa of Savoy—

appointed him her physician, though she never consulted him personally; and an imprudent but honourable stroke of self-assertion cost him both his pension and his appointment. She bade him consult the stars about the course of events in France, and he replied that he would not encourage such idle speculations. Dismissed from the French Court, he proceeded to the Low Countries, and through the influence of Margaret of Austria, obtained the confidential office of historiographer to the Emperor Charles V. This was in 1529; and in the same year he published the history of his royal master's government. Not long afterwards he was called upon to pronounce the funeral oration over Margaret of Austria. The enemies whom he made with singular rapidity wherever he pitched his tent took advantage of the bold speculations in his books, "On the Vanity of Human Knowledge" (of which an English version by J. Sandford appeared in 1569), and "Occult Philosophy," to accuse him of irreligion and blasphemy; and though Cardinal Campeggio, the Papal Legate, and Cardinal de la Marck, Bishop of Liege, intervened on his behalf, his salary was denied to him, and he was thrown into prison at Brussels in 1531. After nearly a twelvemonth's detention, he obtained his release, and then paid a visit to the Archbishop of Cologne, to whom he had dedicated his "Occult Philosophy." Creditors harassing him for his debts, and the Inquisition persecuting him for dabbling in the unhallowed science, he betook himself for safety to Bonn. In 1535 we find him again in France, where he was imprisoned for a libel against the Queen-mother; but being again set free, he proceeded to Grenoble, and died there in the same year, aged forty-eight.

The legendary fiction of which he is the hero was probably invented by his great enemies, the Dominican monks. It is said of him that when on his travels he paid his bills at the hotels with money which at first appeared bright and genuine, but in the course of twenty-four hours proved to be nothing

more than pieces of horn and slate. Also, that he had a favourite dog, which ate at his table and slept at his bedside, but on his master's death mysteriously vanished, being, in fact, a devil in disguise. Thomas Nash would have us believe that, at the request of the Earl of Surrey, Erasmus, and other men of light and leading, he summoned from the world invisible the spirits of many of the great men of old—among others, Cicero, who, by his order, repeated his famous oration "Pro Roscio." He also showed to the Earl of Surrey, when in Germany, the person of his beloved Geraldine in the magic mirror—

"Fair all the pageant—but how passing fair
The slender form, which lay on couch of Ind !
'O'er her white bosom strayed her hazel hair,
Pale her dear cheek, as if for love she pined ;
All in her night-robe loose she lay reclined,
And, pensive, read from tablet illumine,
Some strain that seemed her inmost soul to find :—
That favoured strain was Surrey's raptured line—
That fair and lovely form, the Lady Geraldine."

SIR WALTER SCOTT.

But the most gruesome story associated with his name, one which is highly creditable to the taste in *diablerie* of its inventor, the Jesuit Delrio, runs as follows :—

On one occasion, Agrippa, being about to depart on a long journey, entrusted the key of his study at Louvain to his wife, with a strict injunction that no one should be allowed to enter it during his absence. The lady herself obeyed her husband's order, for she was unaffected by the usual feminine failing of curiosity ; but a young student, who lived in the house, could not rest until he had penetrated into the sanctuary, in the hope of discovering some of the arcana of the philosopher's stone, and employing to good effect his flattering tongue and easy manners, he wheedled out of her guardian-hand the keys. Breathlessly, and on tiptoe, he entered the mysterious

chamber, when his gaze at once rested on a large *grimoire*, or book of magical spells. Seating himself, he began to read, and at the first word, he heard a rapping at the door. He listened, but as it was not repeated, supposed that his imagination had deceived him, and returned with eager eyes to the enchanted page. Another knock so startled him that he sprang to his feet, and with stricken tongue and nerveless lips endeavoured to say—"Come in." The door was thrown wide, and into the room strode a stranger of stately bearing but indignant countenance, who, in a harsh voice, inquired why he had been summoned. "I did not summon you," faltered the terrified student. "But it was so!" exclaimed the stranger; "and the spirits of the nether world may not be summoned in vain." The student stood speechless; and the demon, wroth with the presumptuous youth for uttering the word of invocation, clutched him by the throat, and strangled him.

When Agrippa, after a few days' absence, returned home, he found a legion of devils in possession of his house. Some bestrode the chimney pots, and made the wildest gesticulations; others played at leapfrog on the parapet, others grinned through the casement windows. Inside, they tumbled head foremost down the stairs, and thronged his study in such numbers that he with difficulty made his way to his desk. Finding the book open, and the student dead on the floor, he knew immediately what had happened, and having, with suitable incantations, dismissed the inferior spirits, he reproached the principal demon with his rash and unnecessary cruelty, and ordered him to resuscitate the unfortunate youth, and walk with him in the market-place throughout the afternoon. The demon sullenly obeyed; and the strange couple went to and fro, apparently a couple of attached friends, in the sight of all the people. But at sunset the body fell to the ground, cold and lifeless, and the crowd removed it to the hospital,

everybody believing that the young man had been smitten with a fit of apoplexy. The demon of course had disappeared—it was afterwards affirmed, in a cloud of fire and smoke. Public suspicion was excited; the magistrates instituted an inquiry, and the result was, that Agrippa was ordered to leave Louvain without delay, the townsfolk objecting to the presence among them of a man who was on such intimate terms with demons, and with demons of so decidedly dangerous a character.

Our chronicle now brings us to “the zenith and rising star of all the Alchemists,”—a bold and successful practitioner of the Healing Art,—the celebrated Paracelsus.

His true name was Hohenheim; to which, as baptismal names, were prefixed Aurelius Theophrastus Bombastes Paracelsus. In his boyhood, he chose the last of this resonant series for his customary designation; and as Paracelsus he figures conspicuously in the history of his time.

THEOPHRASTUS PARACELSUS, 1493-1541.

Paracelsus was born in 1493 at Einsiedeln, about two miles from Zurich, where his father was a practitioner of medicine. His early education was of a very rudimentary character; and Sprengel asserts that he spent his boyhood in acquiring the arts of alchemists, and the tricks of conjurors and magicians, and that then, with a smattering of alchemy, astrology, and cheiromancy, and some small knowledge of drugs and diseases, obtained from his father, he set out on his battle with the world, clever, audacious, attractive, and self-reliant. As he wandered from town to town, and university to university, he added to his scanty store, and gradually his inclination and ambition directed his inquiries more particularly to the science of Alchemy. For this purpose he travelled through Spain and Portugal, Hungary, Prussia, and Poland, Norway and Sweden, and seems even to have found his way

to Constantinople in order to learn the secret of making the tincture or elixir from Trismegistus, who resided there. He also obtained information on chemical subjects from Trithemius, Abbot of Spanheim; Bishop Scheit, of Stettbach; Bishop Erhardt, of Laventall; Bishop Nicolas, of Hippon; and Bishop Matthew Schact. For some years he seems to have served as an army surgeon; and he mentions many cures which he effected in the Low Countries, in the States of the Church, in Naples, and during the wars against the Venetians, the Danes, and the Dutch.

It does not appear that he underwent any regular medical training, or that he took a medical degree. He himself, in the preface to his "*Chirurgia Magna*," declares that he visited the universities of Germany, France, and Italy, and that he was the ornament of the schools where he studied. He even speaks of the oath he was compelled to take when he received his diploma, but he omits to state where this took place; and as a man could hardly forget such a circumstance, we think the assertion must be rejected as a figment of his vanity. It is quite clear that he was ignorant of the primary elements of the commonest kinds of knowledge. What he *did* know, he acquired orally; for he boasts that in a period of ten years he never opened a book. Had he said twenty we should have believed him; as at his death his whole library consisted only of a Bible, a Concordance, a New Testament, and St. Jerome's Commentaries on the Gospels. He did not disdain to pick up golden grains of knowledge in any and every quarter: "*non solum*," he says, "*apud medicos, sed et chirurges, tonsores, aniculas, mages, chymistas,* nobiles ac ignobiles, optima, selectiora ac secretiora, quae uspiam extarent remedia, inquisivi acriter.*"

On his return from his travels, which had carried him into almost every country of Europe, he was recommended by

* In this classing together of surgeons, barbers, old women, conjurors, and chemists, does he intend a sly stroke of satire?

Ecclampadius to the professorship of physic and surgery in the University of Basel. There he initiated the custom of lecturing in the vernacular, instead of in Latin; and this innovation, joined to his reputation for having accomplished some wonderful cures, the freedom of his language, the audacity of his speculations, and the extravagance of his pretensions, attracted to Basel an immense crowd of idle listeners, desirous of novelty, and hundreds of enthusiastic and credulous disciples.

The terms in which his egotism found expression were eccentric in their unlimited laudation. In the presence of his pupils he solemnly burnt the works of Galen and Avicenna, assuring his hearers that the strings of his shoe possessed more learning than these famous physicians. In November, 1526, writing to a physician at Zurich, he boasted that as Hippocrates was the first physician among the Greeks, Avicenna among the Arabians, Galen among the Pergamonians, and Marsilius among the Italians, so was he beyond all dispute the greatest physician among the Germans. Every country, he said, produces an illustrious physician, whose medicines are adapted to the climate in which he lives, but are unfitted for other countries. The remedies of Hippocrates were good for the Greeks, but unsuitable to the Germans: hence as it was necessary that an inspired physician should spring up in every country, he, Paracelsus, was the person destined to teach the Germans the art of curing all diseases.

He informed his pupils—no doubt with his tongue in his cheek and a wink in his eye—that all the universities united had not as much knowledge as was contained in his own beard: and that the hairs upon his neck were better instructed than all the writers who ever lived put together. In the preface to his "*Paragrammi*" he breaks out into the following bombast—of the absurdity of which we may be sure he was as well convinced as any of his readers, but, like a quack's

advertisement in our own times, it answered its purpose—it drew attention :—"Me, me, you shall follow," he exclaims; "you Avicenna, you Galen, you Rhazes, you Montagnana, you Mesua! I shall not follow *you*; *you* shall follow *me*! You, I say, you inhabitants of Paris, you inhabitants of Montpelier, you Suevi, you Miomians, you inhabitants of Cologne, you inhabitants of Vienna—all you whom the Rhine and the Danube nourish—you who inhabit the islands of the sea; you also, Italy, Dalmatia, Athens—you Greek, you Arabian, you Israelite—I shall not follow you, but you shall follow me. Nor shall anyone lurk in the darkest and remotest corner whom the dogs shall not defile. I shall be the monarch; the monarchy shall be mine. If I govern and bind up your loins, is he with whom you are at present delighted a Caco-phrastus? This ordure must be eaten by you. . . .

"What will you think when your Cacophrastus is constituted the chief of the monarchy? What will you think when you see the seet of Theophrastus leading on a solemn triumph, if I make you pass under the yoke of my philosophy? Will you then call your Pliny Caeoplity, and your Aristotle Cacoaristotle?"

This fustian increased the popularity of Paracelsus. If a man blow his trumpet loud enough and long enough, though it be only one of tin, the crowd will gather, and begin by listening to end with applause. The world is very apt to take us at our own estimate, if we do but place it high enough, and announce it with sufficient confidence. The belief in our impostor's merits grew stronger as his belief in himself was more loudly proclaimed. The temporary cure which he effected in the case of John Froben, the learned printer, drew the attention of Erasmus, who consulted him about some ailments of his own, but not with any definite advantage; and his short-lived confidence in him was completely destroyed by the death of Froben, in October, 1527, which was attributed to the

violence of the remedies administered by Paracelsus to a man whose health had been wrecked by the gout.

His habits of intemperance proved fatal after awhile to the sudden repute of this eccentric physician. He seldom entered the lecture-room until he was half-intoxicated, or dieted to his amanuensis until he had indulged freely in wine. He was too often in an inebriated condition when summoned to attend a patient. Not infrequently he spent the whole night in an alchouse, so that morning found him incapable of performing his daily duties. On one occasion, after a prolonged debauch, he was summoned to the bedside of a patient. He inquired if the sick person had taken anything. "Nothing," was the answer, "except the Body of our Lord." "Since you have called in another physician," said he, turning on his heel, "you do not want *my* presence." When Albert Basa, the King of Poland's physician, visited him at Basel, Paracelsus carried him to see a patient in a state of such grievous debility that his recovery seemed impossible. To exhibit his skill, Paracelsus administered to him three drops of his laudanum,* and invited him to dinner next day. The invitation was accepted, and the moribund patient was found to have recovered both appetite and digestion.

The professional career of Paracelsus came to a sudden end in the closing weeks of 1567. He had been employed by Canon Cornelius of Lichtenfels, who had long been a victim to "podagra dire," and had promised him one hundred florins if he accomplished a cure. Paracelsus administered three pills of laudanum, and having thus released the sufferer for awhile from pain, demanded the promised honorarium, which

* Thomson says that Paracelsus made use of two preparations which he called *laudanum*. One was red oxide of mercury : the other was thus compounded :—"Chloride of antimony, 1 oz.; hepatic aloes, 1 oz.; rose-water, $\frac{1}{2}$ oz.; saffron, 3 oz.; ambergris, 2 drachms." But he seems to have known the properties of opium.

Lichtenfels refused to pay, except in part. Paracelsus summoned him before the court, and the magistrate decided that the Canon was bound to pay only the regular price of the medicine administered. In his anger at this decision, Paracelsus launched the most vehement invectives against the magistrate, who threatened to punish him; and to avoid imprisonment, the professor fled from Basel, retiring first to Alsace, and afterwards to Colmar, to whose chief magistrate, Hieronymus Bonerus, he dedicated his treatise *De Morbo Gallico* (1529). In 1531 he was at Saint Galien; then comes a blank space in his annals, and he reappears in 1535 at Pfeffersbade, and in 1536 at Augsburg, where he completed his "*Chirurgia Magna*," dedicating it to Malhausen. At the request of John de Leipfa, Marshal of Bohemia, he undertook a journey into Moravia, in order to treat him for the gout, and resided for some months at Kroman or in its environs. But the Marshal, instead of deriving benefit from the Paracelsian specifics—antimony, laudanum, and mercury—daily became worse, and at length died—not of his disease, but of his physician. A similar fate befel the lady of Zerotin, who, under the influence of his powerful remedies, suffered from four and twenty epileptic fits in one day. Without waiting for the result, which he doubtlessly foresaw would be death, he hurried off to Vienna, to see what kind of welcome the Austrians would give him.

From Vienna, it is said he went into Hungary; but in 1538 the wanderer was at Villach, where he dedicated his "*Chronica et Origo Carinthiæ*" to the States of Carinthia. His treatise "*De Natura Rerum*," dedicated to Winkelstein, was written at Villach in 1537. In 1540 he was at Mindelheim—afterwards the property of the great Duke of Marlborough—and, in 1541, at Strasburg, disease induced by intemperance terminated his career, in St. Stephen's Hospital, in the forty-eighth year of his age.

It is not easy to arrive at any exact knowledge of the

medical and philosophical doctrines or systems of this remarkable man, partly on account of his vagueness, his obscurity, and his contradictions, and partly the singular eccentricities of his style. It is almost as difficult to discern where the charlatan ends and the dupe begins; but there is no doubt that, like a good many other impostors, he, to some extent, imposed upon himself. That he was in possession of the philosopher's stone or the elixir of eternal life, as he incessantly asserted, he could not possibly believe; but unquestionably he *did* believe in the wonderful cures he effected and in the marvellous properties of his medicines. There was much real cleverness mixed up with his vanity and affectation.

He has a troublesome habit in his books of applying new meanings to old words, and new words to old meanings. Thus, with him "anatomy" does not signify the dissection of animal bodies, but the nature, force, and magical designation of a thing. The fundamental virtue of any substance he calls a "star," and "alchemy" is the art of drawing out the stars of metals. The star is the source of all knowledge. In eating, we introduce into our bodies "the star," which is then modified, and favours nutrition. Instead of "paganus" he coins the word "pagayus," which he applies to each of the five "entities," or causes of diseases, founded on the influence of the stars; also, to the elementary qualities; also, to the occult qualities and to the influence of spirits, because these had been admitted by the "Pagan" writers. But the fifth entity, or cause of disease, which springs from God Himself, he calls "non pagoya."* Our "œdema" becomes with him

* These five causes are: 1, *Ens Astrorum*, or entity of the stars; 2, *Ens veneni*, proceeding from the decomposition of alimentary substances; 3, *Ens naturale*, or natural entity; 4, *Ens spirituale*; and 5, *Ens déale*, or Christian entity—this last class comprehending all the immediate effects of Divine predestination. The great natural cause is *Tartar*—the principle of all the maladies which proceed from the thickening of the humours, the rigidity of the solids, or the accumulation of earthy matter.

“undimia,” which he applies to every kind of dropsy. For the Latin word “tonitru” he invents a form of declension: thus, he writes “lapis tonitru.” The well-known line of Ovid, “Tollere nodosam nescit medicina podagram,” he travestied into “Nescit tartaream Roades curare podagram.” “Roades,” he says, means medicines for horses—and whoever wishes for a more elegant verse, may construct one for himself (*qui elegantiores optat, ille cum condat*).*

In his therapeutics and materia medica Paracelsus was greatly influenced by the Jewish Cabbala. “As all terrestrial things have their image in the region of the stars, and as diseases depend also on the influence of the stars, we have nothing more to do, in order to obtain a certain cure for these diseases, than to discover, by means of the Cabbala, the harmony of the constellations. *Gold* is a specific against all diseases of the *heart*, because, in the mystic scale, it is in harmony with that viscus. The *liquor of the moon* and crystal cure the diseases of the brain. The liquor *alkahest* and *chieri* are efficacious against those of the *liver*. When we employ vegetable substances, we must consider their harmony with the constellations, and their magical harmony with the parts of the body and the diseases, each star drawing, by a sort of magical virtue, the plant for which it has an affinity, and imparting to it its activity. So that plants are a kind of sublunary stars. To discover the virtues of plants, we must study their anatomy and cheiromancy; for the leaves are their hands, and the lines observable on them enable us to appreciate the virtues which they possess. Thus the anatomy of the *chelidonium* shows us that it is a remedy for jaundice. These are the celebrated *signatures* by means of which we deduce the virtues of vegetables, and the medicines of analogy which they present in relation to their form. Medicines, like women, are known by the forms which they affect. He who calls in question

* THOMSON, *History of Chemistry*, i. 151, 152.

this principle accuses the Divinity of falsehood, the infinite wisdom of Whom has contrived these external characters to bring the study of them more upon a level with the weakness of the human understanding. In the corolla of the *euphrasia* there is a black dot; from this we may conclude that it furnishes an excellent remedy against all diseases of the eye. The lizard has the colour of malignant ulcers, and of the carbuncle; this points out the efficacy which that animal possesses as a remedy.

“These *signatures* were exceedingly convenient for the fanatics, since they saved them the trouble of studying the medical virtues of plants, but enabled them to decide the subject *a priori*. Paracelsus acted very considerately, when he ascribed these virtues principally to the stars, and affirmed that the observation of favourable constellations is an indispensable condition in the employment of these medicines. The remedies are subjected to the will of the stars, and directed by them; you ought therefore to wait till heaven is favourable, before ordering a medicine.” *

But we may pardon the absurdities, the mendacities, and the wild speculations of Paracelsus in consideration of the invaluable service he rendered to Medicine by insisting upon the *chemistry* of his remedies. He introduced a new era in the preparation of drugs. Syrups, elcctuaries, confections, decoctions were replaced by *tinctures*, *essences*, and *extracts*. He contends that the true use of Chemistry is to prepare medicines and not to make gold. He declaims against cooks and innkeepers, who, by drowning drugs in soup, dilute and destroy their properties. He reproaches medical practitioners for prescribing simples, or mixtures of simples, and declares that the object should always be to extract the quintessence of each substance, and he describes in detail the method of extracting this quintessence. The curative methods of the

* THOMSON, *ut antè*, i. 163-165.

disciples of Galen he strenuously repudiates, and censures them for attempting to correct the action of their medicines by the admixture of useless ingredients. He affirms that the only correctives are fire and chemistry.

Paracelsus was the first to employ tin as a remedy for worms. He introduced the use of mercury in the treatment of syphilis, and in several other diseases. Opium he also employed largely; and many other chemical preparations were either initiated or first openly prescribed by him. Thenceforward, the science of Chemistry entered into the regular curriculum of the medical student. It was cultivated no longer with a view to discover the philosopher's stone, but for the preparation of medicines; and a great number of new drugs and compounds—both vegetable and mineral—were speedily produced in the laboratories of the great chemical physicians.

The physiology of Paracelsus was exceedingly fantastic. He taught that man had a sidereal as well as a material body, and that the former outlived the latter for a considerable period. He thus explained the apparition of the dead, in which he professed himself a firm believer. This astral influence he connected with each of the corporeal elements; inventing a *sideric salt* to account for the consistency of the body—a *sideric sulphur*, as the source of animal heat and growth—and a *sideric mercury*, as the foundation of fluidity and volatilisation.* The combination of these three elements formed the body. He also taught that the chemical operations in the stomach, which separated the poisonous from the nutritous parts of the food, and furnished the latter with the tincture which gave them a power of assimilation, were presided over by a demon or intelligence, called *Archeus*. He alone it is who cures diseases. He has a head and hands, and is, in fact, the spirit of life, man's *sideric* or astral body.

* SPRENGEL, iii. 311.

Paracelsus not only endowed all nature with life, but peopled the invisible world with living beings, which dwelt in the four elements, and underwent death and disease like man. These he distinguished by the names of silvanis or sylphs, undines or nymphs, gnomes, and salamanders. "It is thus observable," says Hallam, "that he first gave these names, which rendered afterwards the Rosicrucian fables so celebrated."

The reader who would wish to know more of this extraordinary man and of his doctrines may consult Spréngel's "History of Medicine," Thomson's "History of Chemistry," and the *Opera Paracelsi* (Basel, 1581), to which an elaborate Dictionary was compiled by his pupil Dornæus (Gerard Dorn).*

JEROME CARDAN.

"A man far superior to both Agrippa and Paracelsus was Jerome Cardan; his genius was quick, versatile, fertile, and almost profound; yet no man can read the strange book on his own life, wherein he describes, or pretends to describe, his extraordinary character, without suspecting a portion of insanity." Such is Hallam's opinion of this remarkable

* Thomson says:—"It is from the time of Paracelsus that the true commencement of chemical investigations is to be dated. Not that Paracelsus or his followers understood the nature of the science, or undertook any regular or successful investigation. But Paracelsus shook the medical throne of Galen and Avicenna to its very foundation; he roused the latent energies of the human mind, which had for so long a period lain torpid; he freed medical men from those trammels, and put an end to that despotism which had existed for five centuries. He pointed out the importance of chemical medicines, and of chemical investigations, to the physician. This led many laborious men to turn their attention to the subject. Those metals which were considered as likely to afford useful medicines, mercury, for example, and antimony, were exposed to the action of an infinite number of reagents, and a prodigious collection of new products obtained and introduced into medicine."

combination of intellect and credulity. In a similar strain Tiraboschi writes of him:—"Whoever would suppose," he says, "that a man foolishly overwhelmed by judicial astrology—a man more credulous about dreams than any silly maiden—a man who believed that he enjoyed the friendship of a Demon, who, by marvellous signs, warned him of perils—a man who himself saw and heard things never heard or seen by any other man—a man, in short, of whom, if we read only certain of his works, we should affirm that he was the greatest fool who ever lived—who would suppose," adds the Italian historian, "that such a man was at the same time one of the profoundest and most fertile geniuses that Italy has produced, and that he made rare and precious discoveries in mathematics and in medicine?"

In a more friendly, and, perhaps, in a juster spirit, his latest biographer, Henry Morley, writes:—"His folly may instruct us. It belonged—bating some eccentricities—not to himself alone. His age claimed part in it, and bought his books. He was the most successful scientific author of his time; the books of his that were most frequently reprinted being precisely those in which the folly most abounded. He was not only the popular philosopher, but also the fashionable physician of the sixteenth century. Pope and emperor sought him; kings, princes, cardinals, archbishops, were among his patients. There were other physicians in those days wise enough to be less credulous on many points, but greater wisdom did not win for them an equal fame. Cardan obtained a splendid reputation wholly by his own exertions, not only because he was a man of power and genius, but because he spent much of his energy upon ideas that, foolish as they now seem, were conceived in the true spirit of his age. He belonged completely to his time. Hence it is that, as a philosopher, he almost perished with it; and for the last hundred years his reputation has existed only as a legend."

A brief sketch of his life and his life-work will assist the reader in his judgment on these different estimates, and enable him to determine Cardan's place in the records of medical science.

Jerome Cardan, the son of Fazio Cardan, doctor in law and medicine, and of his wife, Chiara or Clara, was born at Pavia, on the 24th of September, 1501. Neither mother nor father bestowed any affectionate care upon the babe, who, however, struggled through the usual trials of infancy with admirable perseverance, and finally conquered a severe attack of dysentery and fever. Up to his eighth year, he says, he had knocked often at the door of Death, but those within had refused to open it (*pulsavi ostium, sed non aperuere qui intro erant*). Endowed by nature with an active and a fertile intellect, his thoughts at an early age were directed to serious subjects, such as seldom engage the attention of childhood; and he was still in his boyhood when he occupied his leisure in the composition of a treatise "On the Earning of Immortality." His father instructed him in reading, writing, and arithmetic, in geometry, and in that folly of the wise, astrology; he also acquired a knowledge of Latin, though he was nineteen before he acquired it grammatically, and was able to write in the tongue which then formed the universal medium of communication between the scholars of all countries. His restless genius plunged precociously into the work of original composition. He had completed, before he was twenty-three, an astronomical treatise, and an elaborate essay on the science that belongs to games of chance. In these pursuits he found a happy relief from the storms that vexed the household of Fazio Cardan; for husband and wife quarrelled incessantly, and the old man seems to have pushed his eccentricity to the verge of madness.

When he was nineteen years old, he was sent to the University of Pavia. He was then a noticeable young man,

both mentally and physically. He was of average middle stature, but narrow-chested; his complexion was fair, with a slight tinge of red on his small oblong face; his hair yellow, "with a strong growth of it in beard under the chin"; eyes small and piercing; a projecting under lip; large upper front teeth; and a loud, harsh voice. That he was possessed of more than ordinary ability he was well aware, for modesty was no part of his character, and he had a strong desire to achieve a lasting fame—so strong that it became the one absorbing dominant purpose of his life. He cared nothing for money, and very little for the pleasures that money can purchase; but he was passionately fond of music—some skill in which had been imparted to him by his mother. Such was Jerome Cardan when he became a student at the University. That he made there a singularly rapid progress the reader will easily understand, because he had both the capacity and the will, though his method of study was certainly irregular. It was as follows:—"After a morning's work he walked in the shade outside the town walls; then he dined; then he gave up his time to music. The young philosopher then took his fishing lines and went a-fishing under shelter of the groves and woods not far beyond the gates of Pavia. A philosopher who means to be immortal must needs think as well as read and write. Cardan could either think or read while he was fishing. He took out with him also into the woods writing materials, and so studied and worked under the thick green leaves, among the wild flowers, throughout the summer afternoon, dreaming ambitious dreams, and fairly striving to fulfil his best desires. At sunset he returned into the town, where his behaviour was not always orderly. Dice and the draught-board had their charms for him! a restless night spent wandering about the streets after a day of music was, in his view, a simple kind of relaxation."

He decided upon Medicine as his profession, instead of

Law. He wished to take care of his health, and enjoy, if possible, a long life—to this object Medicine was obviously more agreeable than Law. He considered, moreover, that the studies connected with the former are surer and more stable than those belonging to the latter. Law is concerned with local affairs; Medicine with things common to the whole world and to all ages. Again, Medicine takes no thought of the opinions of men, but grapples only with pure reason and the eternal law of nature. In his own words:—"In eo instituto a prima ætate mansi, ut vitæ consulerim: studia autem medicinæ magis hinc proposito conducebant quam legum: et ut propiora fini, et ut orbi communia toti, et omnibus sæculis: tamen ut candidiora, ac quæ rationi (æternæ naturæ legi) non hominum opinionibus inniterentur: ideo hæc ipsa amplexatus sum, non jurisprudentia."

Jerome's father died, in the eightieth year of his age, on August 28th, 1524, leaving to his son a house and some small annual income. In the same year he was appointed Rector of the Gymnasium, a post which conferred upon its occupant the difficult and costly honour of the lordship of the University, and plunged him into heavy expenses. Early in 1526 he took his degree as Doctor of Medicine. He was then twenty-five years old; but he had had absolutely no experience in the treatment of disease, and had gained no knowledge of anatomy or physiology. He began at once, however, to practise his profession, and for this purpose established himself at Sacco. He seems to have had patients (unhappy wretches!); but much of his time was given up to music, to games of chance, to hospitable entertainments, and to rambles in the beautiful country round about the town. He continued to study, but in an irregular, desultory way. Impeded by crude thoughts and restless inquiries, his intellect, he says, did not work smoothly or to good purpose; but he dabbled with astrology, and made himself miserable over his horoscope,

which indicated that he would die in middle age. It must not be thought that he was wholly idle. During the six years he was at Sacco he wrote a big book upon "The Method of Healing"; a treatise on an epidemic that raged in the neighbourhood for the whole term of his residence there; and an essay on the plague. He wrote also a treatise upon Cheiromancy, which illustrates the strong superstitious bent of his mind.

Towards the end of 1531 Cardan took to himself as his wife a certain Lucia Bandarini, a poor but beautiful young woman, who made him a brave and loving helpmate for fifteen dark and arduous years, and died in 1546, just as the clouds of adversity were breaking before the coming sunshine.

In February, 1532, the young physician and his wife repaired to Milan, where he made an unsuccessful effort to establish himself. Towards the end of April they removed to Gallarate, believing it held out a prospect of employment. But Fortune continued to frown, and, struggling with poverty and debt, Cardan, to ensure a philosophic strain of mind, sat himself down to write a treatise upon Fate. In May, 1534, his eldest son, Gianbatista, was born; and soon afterwards, defeated by an evil destiny, the young couple made their way back to Milan in such destitution—for Cardan's income in nineteen months had not exceeded forty crowns—that they were compelled to seek shelter in the poor-house. Cardan, however, had found a patron in Filippo Archinto, for whom he had written a book on "The Judgments of the Astrologers;" and his influence procured him a small appointment as lecturer on geometry, arithmetic, and astronomy, under the endowment of one Thomas Plat. The emolument cannot have exceeded fifty crowns a year; but this was a fortune to a man who could make a good meal on barley-bread and water, with a relish of nasturtium leaves, parsley, or any other herbs. The Collegio of Physicians at Milan excluded him

from their body because he was of illegitimate birth; but as a graduated Doctor of Medicine he practised, in defiance of their authority, whenever he had the chance. And here, at Milan, he met with his first patient of note in the prior of the Augustines, whom he was lucky enough or skilful enough to restore to health after he had suffered for two years from biliary derangement, skin disease, and melancholy. His art was also successfully employed in the case of Bartholomæa Cribilla and her brother; but nevertheless, the jealousy of the Milan doctors and his own eccentricities militated against the professional prosperity which these cures should have raised on a sure foundation.

“It was in the life-time of Cardan,” says Mr. Morley, “that the sap began to find its way into the barren stems of many sciences. The spirit of inquiry that begot the Reformation was apparent also in the fields and woods, and by the sick beds of the people. Out of the midst of the inert mass of philosophers that formed the Catholic majority in science, there came out a small number of independent men who boldly scrutinized the wisdom of the past, and diligently sought new indications for the future. Cardan was one of these; perhaps the cleverest, but not the best of them. It was said after his death, probably with truth, that no other man of his day could have left behind him works showing an intimate acquaintance with so many subjects. He was one of the few who can be at once versatile and profound. He sounded new depths in a great many sciences, brought wit into the service of the dullest themes, dashed wonderful episodes into abstruse treatises upon arithmetic, and left behind him in his writings proofs of a wider knowledge and a more brilliant genius than usually went in those days to the making of a scholar’s reputation. Jerome, however, had not a whole mind, and the sick part of him mingled its promptings with the sound in all his writings. To anyone now reading through the great pile of

his works, the intellect of the uneasy philosopher might readily suggest the image of a magnificent moth half-released from the state of chrysalis, its head and feet and front wings working out towards free space and upper air, but all the rest bound by some morbid adhesion to its dusky shell."

For Medicine Cardan did this : he fanned that spirit of free inquiry which Paracelsus had kindled, and rejected the claims of Authority in favour of the teachings of Experience. His medical treatises contain much that is sensible and satisfactory, but involved, unfortunately, in a cloud of superstition and credulity ; and though his contemporaries called him "verum Medicinæ lumen," posterity must needs dispute that the light shone very brightly or very far.

Meanwhile, Cardan did not prosper at Milan. His growing repute as a teacher of geometry, arithmetic, and astronomy injured his practice as a physician. The public refused to believe that a man could be a good doctor if he distinguished himself in any other capacity—an error which survives to this day—and would not accept Mathematics as a cognate science to Medicine. To rehabilitate his professional reputation, Cardan determined on writing a purely medical book ; and with a fine scorn of his jealous rivals composed (in fifteen days) a treatise "On the Methods of Healing now in Use" (*De Malo Recentiorum Medicorum Medendi Usu*), which, in the following year, was printed and published by his friend, Ottaviano Scoto, the printer. It did not so much define any new mode of treatment as attack existing errors ; such, for instance, as the total denial of wine to the sick—the denial of fish and the allowance of flesh in cases of fever—the belief that a single remedy (or *catholicon*) could be found for all diseases—and the rule that no patient should be bled while suffering acute pain. It was cleverly and freshly written ; and its criticisms, on the whole, were certainly sound and judicious ; but, as a matter of course, it aroused in the minds of the

faculty a most thorough hatred of its author. When did ever any body of men welcome the strictures of a critic? Conservatism lies at the bottom of every profession, and whoever ventures to attack the practices sanctioned by prescription or authority will infallibly provoke the most determined hostility. Cardan, therefore, found no mercy at the hands of his fellow-practitioners; and, as he himself says, where he looked for honour, he reaped nothing but shame. But he persevered with the tenacious resolution which was as characteristic of the man as his superstitious credulity; wrote more books, compiled more lectures, taught his pupils (or rather pupil), and attended to the few patients who summoned his services.

Among them was one Count Camillo Borromeo, whom he had cured of a serious disorder; but because Jerome refused to sit up with him all night when he was suffering from some slight ailment, he slandered him through all the town, and Cardan, therefore, abandoned him. But one day, when passing his house, he was urgently requested to attend a sick nurse: he did so, and in two days she was well. He was then solicited to prescribe for the Count's only child, a boy of seven, who was very ill. Now on the preceding night, it so happened that he had dreamed a dream of a snake, which portended danger to himself; but he went to the Count's palace, and found the child's pulse pausing after every four beats, so that he felt convinced the poor child would not live. He went home, wrote a prescription containing one very powerful ingredient, and had sent a messenger with it to get it made up at an apothecary's, when he remembered his dream, and also that in Borromeo's arms a snake figured. Then he thought to himself: the boy will die, and as apparently he has no serious disease, it will be said, after his death, when my prescription is examined, that with the aforesaid active ingredient I killed him. He therefore recalled his messenger, and wrote another, compounded of pearls, gems,

and the bone of a unicorn (*aliud scribo è margaritis, osse monocerotis, gemmis.*) At the same time, he warned the mother that her son could not be saved. Other physicians were called in, whose diagnosis was more favourable; and they, when Cardan's prediction was fulfilled, declared that he had not understood the boy's complaint. On referring to his prescription, however, they could not assert that it had induced the fatal issue; and then Cardan congratulated himself that he had been so prudent as to act upon the warning of his dream.

Another and a more striking instance of Jerome Cardan's superstition may be given. One evening, in July, 1536, as he left his house, he became sensible of an odour like that of extinguished tapers. He called out his household, and it was recognized by all, except his mother, who was suffering from a cold, and all believed that such a smell was of evil omen. That night he was much harassed by a noise like that of swine and geese outside. In the morning, greatly troubled by these alarming signs, he went forth to wander in the fields; and on his return was hurriedly summoned to see a neighbour—a man of bad character—who had been struck by lightning. He was dead; and then our physician's mind was easy, for he saw that the presages applied to his neighbour and not to himself.

In 1537 we find him writing books upon Wisdom and Consolation—happily chosen subjects for a man in his unprosperous circumstances, who needed wisdom to guide himself out of them, and consolation to enable him to bear them. In the same year he secured a new patient and an influential friend. Through a druggist, named Donato Lanza, whom he had cured of a spitting of blood, he was recommended to Francisco Spondrato, of Cremona, a distinguished senator, whose eldest son had been for some time afflicted with puerile convulsions, and reduced to an extreme condition of mental and

physical debility, though he had been long under the charge of a leading physician, Luca della Croce. As the child grew no better, Della Croce proposed a consultation, and advised that the imperial first physician, Ambrose Cavenegar, should be called in. To this Spondrato consented, naming as the third party to the consultation Jerome Cardan.

The three doctors assembled at the bedside of the patient, Spondrato being present. The first to offer an opinion was Della Croce. Then followed Cardan: "It is a case," he said, "of *Opisthotonos*." Della Croce had never heard the term before; but it expresses the excessive action of those muscles by which a limb or the body is curved backwards. "How do you know that?" inquired Della Croce. Cardan showed how the child's head was retracted back, and could not be drawn forward into its natural position. Then said the father: "Since you know what the disease is, do you also know how it can be remedied?" Ultimately, the treatment of the case was left in his hands. Accordingly, he put the child on a light milk diet, enjoined that it should be kept in a warm room and gently rocked to sleep, and ordered fomentations and external applications of lilies and linseed oil. In four days the child recovered—to the intense delight of Spondrato, who thenceforth became Jerome Cardan's warm and generous friend; and, in 1539, after a long struggle, obtained his admission into the Milanese College of Physicians.

In 1539 was published Cardan's "*Practice of Arithmetic*." During the next two years we grieve to admit that our brilliant physician and mathematician supported his family chiefly by gambling. He had made the acquaintance of a rich patrician, Vicomercato, from whom he won at the dice-table about a gold piece daily. With the money thus earned he was still improvident enough in the midst of his poverty. "He enjoyed musical evenings, and music, as he said, led to unprofitable company. The taste of the period was for part-singing, and

it was not easy to collect four or five men who could sing readily together, and who could think and feel together also. If he had musical companions to his house they cost him heavily for suppers, and corrupted the minds of his children. For most singers, he said—and we suspect that he could not easily libel the good table-companions of the sixteenth century—are drunken, gluttonous, impudent, unsettled, impatient, stolid, inert, ready for every kind of lust. The best men of that sort are fools. Upon such men, despising them but relishing their music, Cardan squandered a good deal of his money.”

In 1542, however, Cardan's golden goose failed him; Vicomercato abandoned the gaming-table. Cardan's penury for some time was extreme; but it is always the darkest an hour before day, and Fortune began to smile upon him when she seemed to have veiled her face in the deepest gloom. The pressure of war had compelled the University of Pavia to migrate for awhile to Milan; but as the University funds had almost disappeared, very few of the professors cared to retain their chairs, and that of Medicine becoming vacant, the Senate offered it to Jerome Cardan. It did not give any secure salary, but it gave an improved and influential position. He accepted it, and when the University, on a change in the aspect of affairs, returned to Pavia, he agreed to retain his professorship, with an annual stipend of two hundred and forty gold crowns.

Cardan's great work on Algebra was published in 1545. In these pages we are concerned with him chiefly as a physician, but so much of his fame rests upon his mathematical discoveries, that we feel the necessity of directing the reader's attention to them.

Cardan may justly be styled the founder of the Higher Algebra. No doubt he owed a good deal to others; but the science as it is originated in his “*Ars Magna*”—the work to which we have already alluded. Many of its novelties are

very valuable; but the most celebrated—the rule for the solution of cubic equations—he obtained from a man not inferior to himself in mathematical genius, Nicolas Tartaglia or Tartalea. The original inventor appears to have been Scipio Ferro, who, about 1505, by some unknown process, discovered the solution of a single case: that of $x^3 + p x = q$, Ferro divulged it to one Fiori or Floridus, who invited Tartalea to a public trial of skill. His competitor had previously found the solution of two other forms of cubic equation: $x^3 + p x^2 = q$, and $x^3 - p x^2 = q$. When the day of battle arrived, Tartalea succeeded not only in solving the problems offered by Fiori, but in baffling him completely by proposing others which resulted in the forms of equation whose solution he himself had discovered. This was in 1535, and four years later Cardan acquired the process from Tartalea under an oath of secrecy. In his “*Ars Magna*” he openly broke his oath, but he gave the entire credit of the discovery to Tartalea, declaring it to be a “golden way” which had led him to all his own discoveries.

Cardan, it is universally admitted, made a great epoch in the science of Algebra. “It appears,” says Dr. Hutton, referring to the first chapter of Book X. of the “*Ars Magna*,” “from this short chapter, that he had discovered most of the principal properties of the roots of equation, and could point out the nature and number of the roots, partly from the signs of the terms, and partly from the magnitude and relations of the co-efficients.” He could transform a complete cubic equation into one wanting the second term. Leonard of Pisa had known that quadratic equations might have two positive roots; but Cardan first perceived, or at least first noticed, the negative roots, which he calls “*fictæ radices*.” To him also is attributed the discovery that every cubic equation has one or three real roots; that there are as many positive or true roots as changes of sign in the equation; that the co-efficient

of the second term is equal to the sum of the roots, so that where it is wanting, the positive and negative values must compensate each other; and that the known term is the product of all the roots. Further, he was acquainted with a method of extracting roots by approximation; though the definiteness of solution necessary in all numerical problems prevented him from making any great progress in this direction. He does not lay down all his rules with adequate precision of expression, and he confines himself chiefly to equations not above the third power; though he first published the method of solving biquadratics, invented by Ferrari. Cassati has also proved that the application of algebra to geometry, and even to the geometrical construction of problems, was known in some cases by Tartaglia and Cardan.

Commenting upon Cardan's mathematical achievements, Mr. Hallam says:—"These anticipations of his are the more truly wonderful when we consider that the symbolical language of algebra, that powerful instrument, not only in expediting the processes of thought, but in suggesting general truths to the mind, was nearly unknown in his age. Diophantus, Fra Luca, and Cardan make use occasionally of letters to express indefinite quantities, besides the *res* or *cosa*, sometimes written shortly, for the assumed unknown number of an equation. But letters were not yet substituted for known quantities. Michael Stifel, in his *Arithmetica Integra*, Nuremburg, 1544, is said to have first used the signs + and -, and numeral exponents of powers. It is very singular that discoveries of the greatest convenience, and apparently not above the ingenuity of a parish schoolmaster, should have been overlooked by men of extraordinary acuteness, like Tartaglia, Cardan, and Ferrari, and hardly less so, that by dint of this acuteness they dispensed with the aid of those contrivances, in which we suppose that so much of the utility of algebraic expression consists."

The publication of the "Great Art," and of many other works which we cannot notice here, finally established the fame of Cardan; and, at the age of forty-three, after years of suffering and endeavour, of disappointment and penury, he found himself renowned throughout Europe as physician, mathematician, and man of letters. A more brilliant example of what may be achieved by individual effort in the face of adverse circumstance—of what is possible to the patience, the courage, and the will of genius—biography does not offer. By virtue of immense brain-power and of incessant activity, he had fairly mastered Fortune—had taken the giant world by the throat (to use an image of the author of "Festus") and thrown it. Over low birth, poverty, physical disadvantages, and his own weaknesses, he had risen triumphant. Let the student, when he feels baffled and disheartened, breathe the name of "Jerome Cardan," and take new hope.

One is amazed at the variety and fecundity of this man's intellect. He dealt easily and readily with the most widely different subjects. None were too abstruse for him to grapple with and make his own. His mind fathomed the world's mysteries, or attempted to do so, and he busied himself with ingenious speculations concerning things the most recondite and remote. But he was endowed with a very lively imagination, and this sometimes led him into erratic and bewildering paths. The brilliant mathematician, who could so clearly reason out the most complicated problems of algebra, lost himself in discussions upon chiromancy, dreams and omens, ghosts, and astral influences. There was scarcely anything which he was not ready to believe. The slightest accident he accepted as a basis for a forecast of the future, with which he concerned himself a great deal more than he did with the present. But whatever theme he touched—high or low, profound or shallow, actual or imaginary—he was always so lively, even when he was most learned, that it is impossible to

read him without being amused. Cardan never wearies his readers ; whether he treats of the mysteries of heaven and earth, the forms of quadratic equations, or the ills that afflict the human body, his style is animated, picturesque, terse, epigrammatic.

Modern writers are reticent about themselves ; Cardan delighted in personal gossip. Whatever interested him must, he thought, prove of interest to his readers ; and to Jerome Cardan nothing was so interesting—not even his favourite algebra or astrology—as Jerome Cardan. So we get the fullest details of his manner of living, his habits, his tastes, his idiosyncrasies. Being a doctor, he says, he took but little medicine ; exercise, diet, and sleep, were his three great recipes for the preservation of health. He was not one of those unwise students who consume life over the midnight oil, and rise before the sun ; he liked ten hours in bed, and slept for eight of these ten hours, if in good physical condition. When troubled by sleeplessness, he cut down his daily dietary, and sometimes had recourse to a curious external remedy—the application of bear's grease, or an ointment of poplar, to seventeen places on the body, such as the crown of his head, the soles of his feet, his heels, thighs, elbows, jugulars, temples, regions of the heart and liver, and upper lip.

When the sun had been up for a couple of hours, Cardan arose. His dress did not trouble him ; he put on whatever clothes lay nearest, and these were generally of an unfashionable description. He believed that four garments were enough for any reasonable man—one heavy, and one heavier ; one light, and one lighter. His breakfast was equally a matter of indifference—generally it consisted of bread, water, and raisins. Retiring to his study, he worked with his feet naked, occasionally pausing to bestow a caress on the dog, cat, or bird that happened to be most in favour. Afterwards, he delivered his lecture at the University, and visited or

received his patients. His dinner was as meagre as his breakfast—the yolk of an egg, with two or more ounces of bread, and a little wine. On Friday or Sunday the bill of fare was varied by the introduction of shell-fish, to which he was exceedingly partial. The meat he most approved was veal, and this he liked to be stewed in a pot, without liquor; it was richer and moister than if cooked on a spit. After dinner, Cardan enjoyed, by way of dessert, a little music.

His chief meal, however, was supper, when he seems to have allowed himself a considerable variety of gastronomic delicacies. Chickens' wings, the livers of capons and pigeons, and giblets generally, were among his cherished tit-bits. But he preferred fish, good and fresh, to any kind of meat; and fresh-water shell-fish to any other kind of fish; and mussels to any other kind of fresh-water shell-fish. Oysters and cockles were by no means unacceptable; and he partook with relish of turbot, cod, mullet, soles, halibut, sturgeon, flounders—not to say pike and carp—tunny in all states, and herrings, whether fresh or salted. A fine fat carp, weighing from three to seven pounds, seemed to him, however, as good a dish as any philosopher could desire.

For sweets he had, as is not uncommon with literary men, a great liking; and he enjoyed most kinds of fruit, such as grapes, figs, melons, cherries, peaches. Oil, too, was a thing he favoured—whether mixed with salt or olives. Onions he found particularly wholesome; rue was valuable in preserving him from poisonous influences; and he considered the use of Roman wormwood beneficial. He drank with his supper about half a pint of sweet wine, to which he added nearly the same quantity of water. On the whole, Jerome Cardan's fare was that of a philosopher. It is evident he did not indulge in excesses of the table. He had no liking for them; and his gouty constitution imposed upon him the abstemiousness which he did not find disagreeable.

In one of his books ("De Vitâ Propriâ"), he sketches out a kind of Philosophy of Life—half-serious, perhaps, and half-humorous. There are, he says, seven *summa genera* of things: air, sleep, exercise, food, drink, medicine, preservatives. Then he adds up fifteen species: air, sleep, exercise, bread, meat, milk, eggs, fish, oil, salt, water, figs, rue, grapes, and onions. And he proposes to enumerate fifteen preparatives: fire, ashes, the bath, water, pot, frying-pan, spit, gridiron, knife-back and knife-edge, grater, parsley, rosemary, and laurel—but in reality he names only fourteen. He speaks of fifteen kinds of exercise, but lays down only ten: the grinding-wheel, walking, riding, pestle and mortar, eart, making of cutlery, riding (already given), the saddle, navigation, cleauing of platters, friction. "These things," says Jerome, "I have reduced to a compendium, after the manner of the theologians, not without exercise of profound thought, and a great display of reason. There are five things that may be taken freely by all except old men: they are, bread, fish, cheese, wine, and water. Two may be used as medicines, mastix and eoriander; sugar is employed in many thiugs. Two things are condiments, saffron and salt, which last also is an element. Four things are to be taken moderately: they are meat, yolk of egg, raisins, and oil: the last a latent element, answering in its properties, when burnt, to the element of the stars."

Of the occasional epigrammatic terseness of Cardan's mode of expression Mr. Morley furnishes a few specimens, which also show that the philosopher had looked upon life with a keenly observant eye, and that all his credulity and superstition did not prevent him from forming shrewd judgments upon men and things:—

"To a man saying, 'I pity you,' I replied, 'You have no right to do so.'"

"I told a youth whom I was warning against evil

company, 'I can show you many an apple that has become rotten through lying with others in a heap, but I can show you no heap that has made a rotten apple sound again.'"

"Better omit a hundred things that should be said than say one thing that ought to be omitted."

"If you were without money, children, friends, and had the other gifts of life, you could be happy. Wanting those, and these also, there would remain to you few days for sorrow."

"The vulgar admire knowledge that comes of experience; the knowledge valued by the learned is that which is obtained by reasoning from the effect up to the cause."

"When you mean to wash, first see that you have a towel handy."

Towards the close of the year 1546, Jerome Cardan lost his wife, and was left in charge of three motherless children. He felt her loss keenly, and the decision in his favour of some law suits which he had prosecuted unintermittingly from the time of his father's death could not compensate for it. His prospects, however, continued to brighten, and his position to improve. The weighty reputation he had acquired we may infer from the fact that he was offered a pension of handsome amount if he would enter the service of Pope Paul III. He wisely preferred independence and freedom. He also declined an offer of eight hundred crowns a year, with free maintenance for himself and a household of five, together with allowance for three horses, from King Christian of Denmark. At this time the University of Pavia woke up to a conviction that it had a man of genius for its professor of medicine, and raised his stipend to four hundred gold crowns.

His lectures at Pavia proved the foundation of his great medical work, the Commentaries on Hippocrates, which, in his own opinion, was the ripest outcome of his intellect, and as a comprehensive review of the noble Art of Healing he

conceived to be unequalled. He anticipated for it an enduring and an universal popularity; for the Art of Healing, he said, concerned everybody, and the teaching of Hippocrates, its founder, would be sought eagerly by thousands. His busy brain, however, was not wholly absorbed by medical or mathematical, astrological or astronomical studies; and in 1547, for the benefit of his children, he drew up a compendium of proverbial philosophy—partly borrowed, but mainly his own invention—which he entitled, *Libellus Præceptorum*, “A Little Book of Precepts.” We believe that none other of his writings, not even the *De Vitâ Propriâ*, so clearly reveals to us the man Cardan himself, in his strength and weakness, in his wisdom and folly, in all the different aspects of his complex character. Let us see, for example, what he has to say in his third chapter, “On Life.” His pithy aphorisms occur in the following order:—

“Study most your way of life, for that lies at the beginning of all things.”

“Sleep should precede labour, labour food, and food should precede drink and come after it.”

“Be satisfied with one kind of food at a time, lest you become gluttonous.”

“Prefer water to wine; and among wines prefer the white.”

“Avoid Plague, War, and Famine, for they spare few, and slay many.”

“Do not eat mushrooms, snakes, or frogs, or aught that grates upon the teeth; and drink not two kinds of wine.”

“Eat only twice a day, and only once of meat.”

“Never accept titbits from strangers, or without knowing whence they come.”

“When you are invited to a feast, if you are obliged to go, be mindful of the fidelity of those who bring to you the cup.”

“Never sleep on feathers.”

"Dismiss all anxious thoughts when you retire to bed."

"Hold jacinth in your hand, to promote sleep and guard you against plague and lightning."

His sixth chapter, "On Prudence in General," is also worth consideration:—

"Next to fortitude, nothing secures happiness so surely as prudence."

"Though nothing may hinder you from knowing what cannot concern you, do not seek to know it."

"Put no faith in dreams, yet do not despise them, especially because they are peculiar in one family."

"Predict nothing uselessly."

"Four good mothers have begotten four bad children: Truth—Hatred; Joy—Mourning; Security—Danger; Familiarity—Contempt."

"It is more prudent to spend money usefully than to put it by; for more results come of the use of money, which is action, than of its preservation, which is rest."

"Never deliberate when the mind is disturbed."

"Say little: among many words some are imprudent."

"Never giggle; laughter abounds in the mouths of fools."

"Great prudence and little wit are better than great wit and little prudence."

"Fortune is more easily to be found than acquired; more easily to be acquired than kept."

"There is no necromancy: it is better for you that you put no faith in alchemy: avoid what is in ill repute."

"Do not talk to other people of yourselves, your children, or your wife."

"Let your dress be clean and elegant, but never costly."

"You will know wise men by their works, not by their words; fools you may know by both."

“When you talk with a bad or dishonest man, look at his hand, not at his face.”

The following are culled from different chapters:—

“You owe to your children agreeable names, knowledge of a useful art, good manners, and education in music, arithmetic, and writing.”

“Little gold is got in a long time and with much labour; much gold is got in a short time and with little labour.”

“Never complain of a father who has left his children poor, if he has left them victuals and the knowledge of a trade.”

“A woman loves or hates; she knows no mean.”

“When you are on the road, think of the road and nothing else.”

“Never swear to keep a secret, if, being free, you would not become slaves.”

“Never talk about your enemies.”

“Delay is the handle to denial.”

“Do not seem to know the misfortunes of others, unless they acquaint you with them.”

“Be more ready to help friends than to hurt foes.”

“Take heed that you never weaken a true cause with falsehoods.”

“Take care that you are better than you seem.”

“Avoid nothing so much as men who speak well and act wickedly.”

“Envy is to probity as shadow to the flesh; so do not fear it.”

“A liar is either a fool, or else he differs but little from a thief and a traitor.”

“Observation of all these rules is not necessary to happiness; but he will be happy who observes them. It is, however, much easier to know these things than to do them.”

The year 1551 was marked by the publication of Cardan's twenty-one books "*De Subtilitate*," which, five years later, were followed by a treatise "*De Varietate Rerum, eorumque Usu*." Both these works attained a wide popularity, and are very characteristic of their author's fertility and ingenuity of mind. They prove at the same time his tendency to fanciful speculations and his ignorance of what would now be considered the very elements of natural science. In this year he resigned his professorship at Pavia, and removed to Milan, where he was residing, towards the end of November, when he was solicited by William Cassanate, physician to the Archbishop of St. Andrew's, to meet that illustrious prelate at Lyons or Paris, and give him his professional advice.

Accordingly, on the 12th of February, 1552, he set out, with five attendants, for Lyons, but on arriving there found no archbishop. For thirty-eight days he remained expectant—but not idle, for many noble patients gladly availed themselves of the opportunity of consulting so famous a physician. At length Cassanate made his appearance, bringing a letter from the archbishop, who was detained at home by serious, urgent, and inevitable business, and implored Cardan to continue his journey to Scotland, forwarding three hundred crowns to defray his expenses. After some hesitation, Cardan consented, and by way of Paris, proceeded to London, whence he travelled northward to Edinburgh, the journey occupying three and twenty days. On the 29th of June he first saw his patient; and thenceforward continued in attendance upon him until the 12th of September. After studying his case for some time he pronounced the illness from which the archbishop suffered to be asthma, and advised a certain mode of treatment, some points of which would seem very strange to a medical practitioner of the present day. For instance, he recommended an ointment, composed of Greek pitch and ship's tar, white mustard, euphorbium, and honey of anathardus—

which might be rendered more stimulant, if necessary, by the addition of cantharides—to be applied over the coronal suture. And to procure a good nasal discharge, he prescribed: Goat's or cow's milk and water, of each half a pint; mix, and dissolve in the mixture two grains of elaterium. This was to be drawn through the nostrils before the patient took food.

With more reason, he advised the use of the shower-bath, and that the Archbishop should take daily exercise in tranquil weather, but be careful never to go out in rain or night-air. He was not to sleep upon feathers, but upon unspun silk. He was not to go to bed immediately after eating, but to wait at least an hour and a half. "Let the sleep be," he said, "for from seven hours to ten, and let the reverend lord believe that there is nothing better than a stretch of sleep; let him, therefore, take time from his business and give it to his bed; or, if that be impossible, let him substract it from his studies: for that should be the chief care of his life, without which no happy life can be enjoyed."

He was cautioned not to use purgatives, which, by disordering the stomach, injured the digestive powers. As a laxative, a compound of conserve of peaches and sugar of violets was ordered—to be taken five hours before breakfast; and his Grace was also to drink, if necessary, from two to four pints of ass's milk, fresh, in the morning, at one dose or in several doses. All immoderate excess and repletion, and equally immoderate abstinence, were to be avoided. And a long list was given of proper and improper articles of diet.

Cardan's prescriptions may not have been of much value, but the strict regimen he enjoined, the limitation of the hours of business, the extension of the hours of sleep, the daily exercise, the wholesome bed, the weekly shower-bath—all these things had a very marked effect on the archbishop's health, and his recovery was rapid. No wonder that he was

unwilling to let his successful medical adviser go. Jeromo remained in Edinburgh thirty-eight days, in attendance upon the archbishop, and giving the advantage of his skill to other illustrious patients. Ho was then summoned to London to consult with the physicians of the young king, Edward VI., who was lying ill with an affection of the lungs. "This summer," writes Bishop Burnet, in his "History," under the date of 1552, "Cardan, the great philosopher of that age, passed through England. He was brought from Italy on account of Hamilton, Archbishop of St. Andrew's, who was then desperately sick of a dropsy. Cardan cured him of his disease: but being a man much conversant both in Astrology and Magic, as himself professed, he told the Archbishop, that though he had at present saved his life, yet he could not change his fate; for he was to die on a gallows.* In his going through England, he waited on King Edward, when he was so entertained by him, and observed his extraordinary parts and virtues so narrowly, that on many occasions he writ afterwards of him with great astonishment, as being the most wonderful person he had ever seen." It is quite true that the young King made a deep impression upon Cardan. "It would have been better, I think," he says, "for this boy not to have been born, or that, being born and educated, he had survived. For he had graces. Quite as a boy, he was skilled in many languages; Latin, his native English, French; and he was not unversed, I hear, in Greek, Italian, Spanish, and perhaps yet others. He was not ignorant of dialectics, or of natural philosophy, or music. In his humanity he was the picture of our mortal state; his gravity was that of kingly majesty, his disposition worthy of so great a prince. The boy of so much capacity and promise was by a great miracle being educated to a comprehension of the sum of human things."

* Cardan did not predict death by the gallows, but by poison. The archbishop was hung at Stirling in 1571.

. . . "There was the mark in his face," he writes elsewhere, "of premature death. Otherwise he was comely, on account of his age and of his parents, who had both been handsome."

In reference to the young King, Cardan showed himself a better physician than astrologer; for having calculated his horoscope, he predicted for him a life protracted into the fifties—a prediction sadly falsified by the actual event. Afterwards, he put forward some excellent excuses for having been mistaken; but with these the reader needs not to be troubled.

Refusing large offers from the Emperor and the King of France, Cardan returned to Milan, where he arrived on the 3rd of January, 1553, and resumed, with vastly increased interest, his beloved studies. In 1555 he wrote a treatise on "The Uses of Water"; and in 1557, among other medical books, a summary of medical science, entitled "*Ars Curandi Parva*." The practice of his profession occupied much of his time, however, and some small daily leisure had to be found for correspondence or personal intercourse with his friends. The most intimate of these seem to have been two brother physicians, Montagnano Cavallo and Aurelio Stanno; Francisco Vimercati, a scholar and philosopher, and a devoted admirer of Aristotle; Cardinal Alciati; Boniface Rhodiginus, jurisconsult and astrologer; and Gianpietro Albuzio, a very learned physician, well versed in polite letters and history, in Greek and Hebrew, and in theology. He experienced some severe domestic troubles in his later years, his eldest son making an unhappy marriage in 1557, and in 1559 poisoning his worthless wife, for which crime he was executed on the 7th of April, 1560. Thenceforward clouds and darkness rested on his path. He struggled with imperfect success to bear his afflictions bravely, plunging deeper into his literary labours, and occasionally seeking the dangerous relaxation of the dice; but his

mental distress still clung to him, like the poisoned shirt of Nessus. "In all good fortune," he writes, "and in the midst of my prosperity, I never changed my manners, was made no rougher, no more ambitious, no more impatient; I did not learn to despise poor men, or to forget old friends; I did not become harder in social intercourse or more assuming in my speech; nor did I wear richer garments than my occupation rendered necessary. But in the bearing of adversity my nature is not so firm, and I have been compelled to endure some things that were beyond my strength. Then I have overcome nature by art; for in my severest paroxysms of grief I whipped my thighs with a switch, bit my left arm sharply, and fasted, because I was much relieved by weeping, when the tears would come, though very frequently they would not." He tells us that one night he heard, or thought he heard, a voice crying to him in a dream, "What do you lament—the slaughter of your son?" He answered, "Can you doubt it?" The voice then said, "Put into your mouth the emerald which you wear round your neck, and that will keep your son out of your memory." He followed this advice, and, he tells us, with good results; so that he was always anxious and oppressed when he could not have the stone between his lips—that is to say, when he was eating or when he was lecturing.

Towards the close of 1562 he sought relief in change of scene, and removed from Pavia to Bologna. But his misfortunes were not wholly at an end. On the 13th of October, 1570, he was thrown into prison, upon an accusation, it is supposed, of holding impious or heretical opinions. After a confinement of eleven weeks, he was allowed to retire to his own house on bail, having given his own bond in eighteen hundred gold crowns as security. Then some of the cardinals interceded on his behalf; and he was finally set at liberty, but forbidden to publish any more books, and courteously

recommended to resign his professorship. This he did; and his friends having procured him a small pension from the Pope, he left Bologna, and in March, 1571, took up his residence in Rome, where he died, on the 20th of September, 1576, at the age of seventy-five.

An edition of Cardan's works, edited by C. Spon, was published at Lyons, in 1663; his "*Do Propriâ Vitâ*" (or Autobiography), in 1654. See also H. MORLEY, "*Life of Girolamo Cardano*," 2 vols., 1854; DR. HUTTON, "*Philosophical and Mathematical Dictionary*," 2 vols., 1815; CASSALI, "*Storia dell' Algebra*;" BRUCKER, "*Historia Critica Philosophiæ*," 6 vols., 1767 (of which there is an English abridgement by W. ENFIELD, "*History of Philosophy*," 2 vols., 1837); and SPRENGEL, French translation, in 7 vols., 1851.

CHAPTER VIII.

ANIMAL MAGNETISM—MESMERISM—FAITH HEALING.

“THE influence of imagination in the cure of disease” is the foundation on which all quackery, ancient and modern, has been established; nor has it been ignored by orthodox practitioners of “the Healing Art.” It is, of course, greatest where the diseases are more or less fictitious; but it has been found effective in the treatment of genuine cases. The connection between the mind and the body is so intimate as to involve a system of interdependence; the mind affects the body, and the body acts upon the mind. Nervous ailments—imaginary in one sense, but real enough in another—are often reached through the mind when every other method has failed; and it is unquestionably true that the rapid spread of epidemics is largely due to the way in which they touch and excite the imagination of the multitude. But instead of dwelling upon a truth which, I believe, no one is now prepared to controvert, I shall proceed to bring together a series of illustrations of the extent to which “the force of imagination,” as Montaigne calls it, has been employed by irregular professors of the Healing Art.

The Prince of Orange dexterously availed himself of it to cure his soldiers, who were dying of scurvy by scores at the siege of Breda, in 1625. He sent to the physicians two or three small phials, filled with a decoction of camomile, wormwood, and camphor, and bade them give out in the camp that they had obtained from the East, with great difficulty and

danger, a very rare and precious medicine—a medicine of such virtue that two or three drops sufficed to impregnate a gallon of water. This statement, made with much solemnity, deeply impressed the soldiers; they took the medicine eagerly, and grew well rapidly.

A century earlier, as we have already seen, Paracelsus made ingenious use of human credulity. He was the first of the Magnetizers, and pretended that in the cure of disease the magnet possessed remarkable occult powers. When practising at Basel he imposed on his patients with a stone or crystal called *azoth*, which, he said, in right of its magic properties, could cure epilepsy, hysteria, and spasmodic affections—nervous diseases, which he evidently hoped to get at through the imagination. He declared that, by means of the magnet, he could transfer diseases from the human frame to the earth; and he formulated half a dozen recipes of magnetic temperament. One of these may be quoted:—"If a person suffer from local or general disease, apply the following remedy: Take a magnet, impregnated with mummy, and mixed with rich earth. In this earth sow some seeds that have a congruity or homogeneity with the disease. Then let this earth, well sifted and mixed with mummy, be laid in an earthen vessel; and let the seeds committed to it be watered daily with a lotion in which the diseased limb or body has been washed. Thus will the disease be transplanted from the human body to the seeds which are in the earth. Having done this, transplant the seeds from the earthen vessel to the ground, and wait till they begin to sprout into herbs; as they increase, the disease will diminish, and when they have arrived at their full growth, it will altogether disappear."

Obviously, there would be considerable difficulty in carrying out this very valuable and interesting prescription! First catch your mummy; but when this serious obstacle has been overcome, how is one to determine what seeds have a

congruity or homogeneity, say, with bronchitis or congestion of the liver? And if the disease be in the liver or the lungs, how is one to wash the diseased part with a lotion?

The Jesuit Kircher, who was also one of the apostles of the magnetic gospel—a gospel which still finds its apostles and disciples, the dupers and the dupes—claims to have actually applied the magnet in the course of his practice. He ordered a sufferer from hernia to swallow a small magnet, which had previously been reduced to powder, while he at the same time laid upon the external swelling a poultice made of iron filings. By this means, he said, the pulverized magnet, on reaching the corresponding part internally, would absorb the iron, and with it the tumour. Whether this singular remedy was tried by the patient, and whether it proved effectual, Kircher has forgotten to record.

As a belief in the efficacy of magnetism spread abroad, it naturally came to include a considerable development of the magnetic influence. Its practitioners gave out that by magnetizing a sword, it could be made to cure any wound which the sword had inflicted. And in this way originated the once-celebrated “weapon-salve.” Here is the recipe of Paracelsus for concocting it:—“Take of moss growing on the head of a thief who has been hanged and left in the air—of real mummy—of human blood, still warm, one ounce each; of human suet, two ounces; of linseed oil, turpentine, and Armenian bole, two drachms each. Mix thoroughly in a mortar, and keep the salve in an oblong, narrow urn.” The sword, after being dipped in the blood from the wound, was to be carefully anointed with this precious mixture, and laid by in a cool place. Meanwhile, the wound was to be washed with fair clean water, bandaged with a clean, soft linen rag, and opened once a day for the purpose of cleansing. This is, of course, the plan adopted in the present day—with the exception of the weapon-salve!

The use of this wonderful remedy was introduced into England by Dr. Robert Fludd, or, as he punningly Latinized his name, *Æ Fluctibus*.

Fludd was born in 1574 at Milgate, in Kent. His father, Sir Thomas Fludd, Treasurer to Queen Elizabeth, intended him for the army; but he evinced a decided preference, as he grew up, for the calmer pleasures of learning, and his father eventually consented to his studying for the medical profession. At the age of twenty-five, he went upon the Continent to complete his education at the foreign Universities; and being naturally of a romantic temperament, with vague yearnings after the Unattainable, like so many of the scholars of his day, he became an enthusiastic disciple of Paracelsus, worshipping him as the reformer and regenerator of philosophy as well as of medicine. For six years he wandered about France, Italy, and Germany, gathering up all the dreams and fantasies that men then mistook for science; and in 1605 returned to England, received the degree of M.D. from the University of Oxford, and began to practise as a physician in London.

Then it was that he brought forward the weapon-salve. With great success he applied it in several cases; but the success is not to be wondered at when we remember that he never failed to go through the very orthodox processes of washing, bandaging, and eleansing, while employing the empirical remedy. He was a firm believer in magnetism, and asserted that the magnet would cure all diseases; but he said that man, having, like the earth, a north and a south pole, could be influenced by it only when his body was in a boreal position. Various attempts were made to deny the efficacy of the weapon-salve; but it had touched the popular imagination, and the disbelievers were in a great minority. There was a certain Pastor Foster who attacked it vehemently in a pamphlet which he entitled "*Hyplocrisma Spongus*; or a

Spunge to wipe away the Weapou-Salve;” protesting that it was a sin of the deepest dye to use or recommend such an unguent; that it was the invention of the Devil, who, at the last day, would claim as his own all who had in any way favoured it. “The Devil himself,” said Foster, “gave it to Paracelsus; Paracelsus to the Emperor; the Emperor to the courtier; the courtier to Baptista Porta; and Baptista Porta to Dr. Fludd, a doctor of Physic, yet living and practising in the famous city of London, who now stands tooth and nail for it.” To this attack Dr. Fludd replied, with not inferior vehemence, in “The Squeezing of Parson Foster’s Spunge; wherein the Spunge-bearer’s immodest carriage and behaviour towards his Brethren is Detected; the Bitter Flames of his slanderous reports are, by the sharp Vinegar of Truth, Corrected and quite Extinguished; and lastly, the virtuous validity of his Spunge in wiping away the Wcapou-Salve, is crushed out and clean Abolished.”

We add a few literary references to this curious delusion and imposture.

In Glapthorne’s comedy of “The Hollander,” Sconce, one of the characters, expresses his anxiety to procure the precious stuff, invented by Lapland witches, that he may safely “confront the glistening steel, outface the sharpest weapon.” An ointment, warranted genuine—for thirty citizens, blown up by an explosion of powder, have been healed by dressing with it the *smolke of the powder*—is furnished by an apothecary’s man. He puts it to the test, and it fails; but this failure Sconce attributes to some impediment in his blood, and willingly credits the physician’s assurance that

“ The same salve will cure
At any distance—as if a person hurt
Should be at York, the weapon dressed at London
On which the blood is.”

In Dryden's adaptation or perversion of Shakespeare's "Tempest," Ariel saves Hippolito's life by directing that the sword of Hippolito, his antagonist, shall be anointed with weapon-salve, and wrapped up from the air. There is a vigorous attack upon the superstition in a letter by the ever-memorable John Hales of Eton, who pronounces this weapon-salve "a child of yesterday's birth," and one of the fancies of the Rosicrucians, and derides its alleged cures, the effect being wrought by one thing, and another carrying the glory of it. "A man is wounded; the weapon taken, and a wound-working salve applied to it; in the meanwhile, the wounded person is commanded to an abstinence as much as may be, and to keep the wound clean. While he thus doth, he heals, and the weapon-salve bears the bell away." He continues:—"I have read that a learned Jew undertook to persuade Albertus, one of the Dukes of Saxony, that by certain Hebrew letters and words, taken out of the Psalms, and written on parchment, strange cures might be done upon any wound; as he one day walked with the Duke, and laboured him much to give credit to what he discoursed in that argument, the Duke suddenly drew his sword, and wounding him in divers places, tells him he would now see the conclusion tried upon himself. But the poor Jew could find no help in his Semhamphoras, nor his Hebrew characters, but was constrained to betake himself to more real chirurgery. I wish no man any harm, and therefore I desire not the like fortune might befall them who stand for the use of weapon-salve; only this much I will say, that if they should meet with some Duke of Saxony, he would go near to cure them of their errors, however they would shift to cure their wounds."

There is an allusion to the weapon-salve in Sir William Davenant's play of "The Unfortunate Lovers" (Act ii. Sc. 1):

"Greatness hath still a little taint in the blood;
And often 'tis corrupted near the heart;

But these are not diseases held, till by
The monarch spied who our ambition feeds,
Till at surfeits with his love ; nor do we strive
To cure or take it from ourselves, but from
His eyes, and then our medicine we apply
Like the weapon-salvo, not to ourselves but him
Who was the sword that made the wound."

The latest reference to it occurs in Mrs. Aphra Behn's "Young King" (1690), in which one of the characters is cured of a wound by a balm

"That like the weapon-salve
Heals at a distance."

But the subject is one which will again engage our attention when we come to speak of the adventurous career of Sir Kenelm Digby.

Fludd was one of the victims of the Rosicrucian delusion. With him, and with many of his contemporaries, the glimpses they got of the wonderland of Science, which was then beginning to reveal its mysteries, dazzled and confounded their imaginations, so that they mistook visions for realities, their own fancies for actual facts. Fludd's credulity was astounding. He believed in the philosopher's stone, the *elixir vite*, and the universal alkahest—in the possibilities, that is, of boundless wealth and immortal youth—which, however, he generously made over to posterity. He taught—and seems to have found some who accepted his teaching—that there were but two principles of all things : condensation, the boreal or northern virtue ; and rarefaction, the southern or astral virtue. A number of demons, he said, held dominion over the human body, and he arranged them in their places in a rhomboid. To every disease, moreover, belonged its own peculiar demon, who could be encountered only with the assistance of the demon whose place was directly opposite to his in the rhomboidal figure.

Among the Rosicrucians Fludd held high place, and when

their doctrines were assailed by matter-of-fact German critics, he produced, in 1616, his celebrated defence, entitled "Apologia compendiaria Fraternitatem de Rosea-cruce suspicionis et infamiæ maculis aspersam abluens." This exposition of the Rosicrucian faith was considered of so much authority that Kepler and Gassendi undertook to refute it. Mersenne, the friend of Descartes, also replied to it, falling foul especially of its expositor, who, in his turn, wrote an angry rejoinder, denouncing Mersenne as an ignorant calumniator, and extolling the Brethren of the Rosy Cross as the regenerators of fallen humanity ("Summum Bonum, quod est Magiæ, Cabalæ, Alchimie, Fratrum Roseæ-Crucis verorum, et adversus Mersenum Calumniatorem"). Fludd died in London in 1637.

We shall hereafter tell the story of Sir Kenelm Digby, who converted the weapon-salve into "the powder of sympathy." He had his imitators and his rivals, who, improving upon his improvement upon Fludd, affirmed that cures might be effected without the use either of salve or powder. It was enough, they said, to magnetize the sword with the hand. If the sword were stroked *upwards* with the fingers, the wounded person would be relieved immediately; if stroked *downwards*, his pain would become almost unendurable. This may be regarded as the dawning of the theory of animal magnetism, as opposed to that of mineral magnetism.

Others there were who propounded the idea of a Sympathetic Alphabet, to be cut on the flesh, by means of which persons at any distance could instantaneously communicate with each other. Two friends, for this purpose, would simply have to cut a piece of flesh from their arms, and exchange the pieces while warm and bleeding—Damon's flesh being allowed to adhere to the arm of Pythias, and that of Pythias to the arm of Damon. Each piece of flesh, it was contended, would remain in sympathy with its original owner. What more

obvious, then, that if you tatoored the letters of the alphabet on the transplanted flesh, and when you had a message to deliver, pricked out with a magnetic needle the necessary combinations to express your meaning, the corresponding pricks in your friend's arm would make him sympathetically sensible of it?

VALENTINE GREATRAKES.

A further development of animal magnetism, faith-healing, or force of imagination—the *principle* has always been the same, by whatever name it has been called—was conspicuous in the cures effected by the celebrated Valentine Greatrakes. This remarkable man began by being the dupe of his own imagination; he ended as a quack and an impostor. The transformation is natural enough, and instances of it are numerous in the history of Human Error.

Valentine Greatrakes, the son of a gentleman of good birth and fair estate, was born at Affane, in the county of Waterford, on the 14th of February, 1628—hence his Christian name. His early education he received at the Academy of Lismore; but when he was about thirteen years old, the outbreak of the Irish rebellion led to the removal of his widowed mother and her family to England, where they were received and sheltered by her brother. Valentine was placed, to complete his education, under the charge of one John Daniel Getsens, minister of Stoke Gabriel, in Devonshire, from whom he imbibed the religious views of the Puritans. Returning to Ireland, he sided with the Puritan party, and for six years, from 1650 to 1656, served in the Munster Cavalry, with the rank of lieutenant, under the command of the Earl of Orrery. In 1656, when the Munster horse was disbanded, he retired to his patrimony at Affane, and occupied himself in local affairs as a Justice of the Peace, a Registrar for Transplantation, and Clerk of the Peace for the County of Cork. The duties and

responsibilities imposed upon the holder of these offices, in the then critical condition of Ireland, were of a very onerous nature; but Greatrakes discharged them with such impartiality and moderation as to win the confidence of all classes. His popularity, no doubt, was assisted by his personal advantages, which were of a kind the multitude are always ready to appreciate. His figure was well-knit and admirably proportioned; his bearing was soldierly, and his manner frank and cordial; he had a very handsome face, with an expression of resolution and intelligence; his voice was musical, and his laugh prompt and genial. Though a Puritan, he was no bigot; though a man of irreproachable life and firm religious principles, he was no foe to social pleasures. As a public man, his conduct was without flaw, and no one could dispute the substantial truth of his *apologia* for his official career. "I studied so to acquit myself before God and man," he says, "in singleness and integrity of heart, that, to the comfort of my soul, and praise of God that directed me, I can with confidence say I never took bribe nor reward from any man, though I had many and great ones before me (when I was Registrar for Transplantation); nor did I ever connive at or suffer a malefactor to go unpunished, if the person were guilty of any notorious crime (when I had power); nor did I ever take the fee belonging to my office, if I found the person were injured or in want; nor did I ever commit anyone for his judgment and conscience barely, so it led him not to do anything to the disturbance of the civil peace of the nation; nor did I take anything for my fee when he was discharged—for I bless God He has taken away a persecuting spirit from me, who would persuade all men to be Protestants, those principles being most consonant to Truth and the Word of God, in my judgment, and that profession which I have ever been of, and still am."

At the Restoration Greatrakes lost his appointments, and

sank into the position of a country gentleman of moderate estate. His active mind, denied the outlet for its energies which public affairs had provided, began to prey upon itself; and in some way or other—stimulated, no doubt, by an external impulse, though, perhaps, unconsciously—he was led to conceive the idea that Heaven had conferred on him a special faculty for curing the King's Evil. For some time he cherished the idea in silence, but the pressure of such a secret was too heavy to be borne alone, and at length he communicated it to his wife. "He did verily believe," he told her, "that God had given him the blessing of curing the King's Evil, for, whether he were in private or in public, sleeping or waking, still he had the same impulse; but her reply was to him, that she conceived this was a strange imagination." Imagination? perhaps so; well, he would put it to the test. So he betook himself to one William Maher, of Saltersbridge, who was suffering from a scrofulous affection in the eyes, cheek, and throat; and, ascertaining that he was a man of ample faith—that is, of lively imagination—he laid his hands upon him, stroked him, and prayed fervently. In a few days, William Maher was wonderfully better; eventually, with the aid of some other remedies, he was completely cured. Great-rakes was then convinced that he had been chosen for a divine mission of healing. The conviction seized him that he could cure the ague; and afterwards he extended his curative powers so as to include within their range epilepsy, lameness, aching pains, and ulcers. Cases were brought to him every day; and his cures were numerous, rapid, and complete. All the county of Cork sent forth its diseased and afflicted; such multitudes, he says, that he had no leisure to attend to his private business, or to enjoy the society of his family and friends. At length, he set apart three days in the week, from six a.m. to six p.m., for the reception of patients. But their numbers were so great that the neighbouring villages

were unable to accommodate them, and for their convenient reception he repaired to Youghal.

His modes of treatment varied greatly, but all proceeded on the principle that the disease was the indication of the presence of a devil, which had to be expelled from the patient before he or she could recover. He almost invariably began with a fervent prayer to God for aid, that he might become the humble instrument of the Divine Mercy. He then passed his hands over the affected part of the patient's body, sometimes over the skin itself, sometimes only over the clothes. The manipulation was gentle or violent—a mere titillation or actual force of rubbing—according to the obstinacy and power of the morbid evil spirit. Occasionally, a few wild passes were sufficient, or the demon would retreat at the physician's command, or would be terrified into flight by a glance from his expressive eyes. In cases of hysteria the latter would suffice; where actual disease was present, rapid and continuous friction, inducing copious perspiration, would probably prove beneficial in numerous instances.

As Greatrakes refused payment for his services, and as the cures he effected were beyond all doubt, it is no wonder that the afflicted resorted to him, not only from all parts of Ireland, but from England also. His increasing renown drew upon his proceedings the hostile attention of the Church, and the Dean of Lismore summoned him to appear before his court, and prohibited him from laying on his hands until he had obtained the Bishop's licence. That the Bishop's licence would not be given, Greatrakes was well aware; and as he had received (in his own belief) a commission from Heaven, he cared nothing for Dean or Bishop. He went on his way, exercising his supposed miraculous powers, until he was sent for by Lord Conway, from London, in the hope that he might be able to cure Lady Conway of a terrible headache, which had defied the skill of the leading physicians of England.

He accepted the invitation, and for a month was the guest of Lord Conway at his country house in Warwickshire. But Lady Conway's headache did not yield to his manipulations, exorcisms, or glances, owing, it is to be supposed, to want of faith or the malignant influence of some exceptionally potent devil. Greatrakes, however, effected so many cures in the surrounding district as to more than counterbalance this solitary failure. He went on to Worcester, where he was equally successful; and from thence to London, where he was admitted to the presence of Charles II.—a rival practitioner in the matter of the King's Evil. He took a house in Lincoln's Inn Fields, which immediately became the resort of the lame and the blind, the dumb and the deaf, and for a time he enjoyed a measureless popularity.

The witty St. Evremond furnishes, in his "Miscellanies," a graphic account of Greatrakes at the apogee of his fame (1665):

"When M. de Commynes," he says, "was ambassador from his Most Christian Majesty to the King of Great Britain, an Irish prophet, who gave himself out to be a great miracle-worker, arrived in London. Some persons of quality having entreated M. de Commynes to invite him to his house, that they might see him perform some of his miracles, the ambassador promised to satisfy their curiosity and his own, and sent word to Greatrakes that he would be pleased to see him.

"A rumour of the prophet's visit was soon noised abroad; and the ambassador's hotel was crowded by sick persons, who came full of confidence in their speedy recovery. The Irishman imposed upon them a considerable delay, but came at length, in the midst of their impatience, with a grave, frank confidence that showed no signs on his part of intended deception. M. de Commynes prepared to question him closely, and to discuss with him the matters he had read of in Van Helmont and Bodinus, but was unable to do so, much to his regret, for the crowd became so great, and cripples and

others pressed around so impatiently to be the first cured, that the servants were compelled to use threats and even force before they could establish order among them, or place them in proper ranks.

"The prophet affirmed that all diseases were caused by evil spirits. Every infirmity was, in his view, a case of diabolical possession. The first patient presented to him was a man suffering from gout and rheumatism, so severely that the physicians had been unable to cure him. 'Ah!' said the miracle-worker, 'I have seen many of this order of evil spirits in Ireland. They are watery spirits, who induce cold shivering, and excite an overflow of aqueous humours in our poor bodies.' Then, addressing the man, he said: 'Evil spirit, who hast quitted thy dwelling in the waters to come and afflict this miserable body, I command thee to quit thy new abode, and to return to thine ancient habitation!' This said, the sick man was ordered to withdraw, and another came forward in his place. This new-comer said he was tormented by the melancholy vapours; in fact, he looked like a hypochondriac—one of those persons, diseased in imagination, who too often become so in reality. 'Aerial spirit,' said the Irishman, 'return, I command thee, into the air; exercise thy natural vocation of raising tempests, and do not excite any more wind in this unfortunate body!' This man was immediately turned away to make room for a third patient, and he, in the Irishman's opinion, was tormented only by a little bit of a spirit, who could not oppose his command for a moment. He pretended to recognize this imp by some marks which were invisible to the company, and turning to them he said, with a smile, 'This kind of spirit does not often do much harm, and is always very entertaining.' To hear him talk, you would imagine that he knew all about spirits—their names, their rank, their numbers, their employment, and all the functions imposed upon them; and he boasted of being

much better acquainted with the intrigues of demons than he was with the affairs of men. You can surely imagine how vast a reputation he acquired in a very brief period. Catholics and Protestants visited him from all parts, believing that power from Heaven was in his hands. . . . So great was the faith reposed in him, that the blind fancied they saw the light which they did not see; the deaf imagined that they heard; the lame that they walked straight; and the palsied that they had recovered the use of their limbs. An idea of health made the sick forget their ailments for awhile; and imagination, which was not less active in those merely drawn by curiosity than in the sick, gave a false bias to the one class from the desire of seeing, as it effected a false cure on the other from the strong desire of being healed. Such was the power of this Irishman over the mind, and such the influence of the mind over the body. Nothing was spoken of in London but his prodigies; and these prodigies were supported by authorities of so much weight that the bewildered multitude believed them almost without examination, while more enlightened people felt afraid to reject them from their own knowledge. Public opinion, timorous and enslaved, respected this imperious and apparently well-authenticated error. Those who saw through the delusion kept their opinion to themselves, knowing how useless it would be to express their incredulity to a people filled with ignorant and bigoted admiration."

Among his supporters were many, however, who could not be classed with the ignorant, such as Mr. Boyle (the Earl of Orrery's brother), Sir William Smith, Judge Godfrey, Whichcote and Cudworth, Dr. Wilkins, and Sir John Godolphin. The delusion attained the most extraordinary proportions, for such men as Dean (afterwards Bishop) Rust and Dr. Henry Stubb testified in all sincerity that a curative odour of exquisite beauty—a kind of divine *aura*—was given off from the great thaumaturgist's body. "God had bestowed upon

him," says Dr. Stubb,* "a peculiar temperament, or composed his body of some particular ferments, the effluvia whereof, being introduced sometimes by a light, sometimes by a violent friction, should restore the temperament of the debilitated parts, re-invigorate the blood, and dissipate all heterogenous ferments out of the bodies of the diseased by the eyes, nose, mouth, hands, and feet. I place the gift of healing in the temperament or composure of his body, because I see it is necessary that he touch them. Besides, the Right Honourable the Lord Conway observed one morning, as he came into his lordship's chamber, a smell strangely pleasant, as if it had been of sundry flowers; and demanding of his man what sweet water he had brought into the room, he answered *None*, whereupon his lordship smelled upon the hand of Mr. Greaterick, and found the fragrancy to issue thence, and examining his bosom, he found the like scent there also."

Of the cures which he effected numerous certificates are extant. The following specimen will be interesting, because it is signed by the poet and patriot, Andrew Marvell:—

"I, Anthony Nicholson, of Cambridge, Bookseller, have been affected sore with pains all over my body, for three-and-twenty years last past; have had advice and best directions of all the doctors there; have been at the Bath in Somersetshire, and been at above one hundred pounds expense to procure ease, or a cure of these pains; and have found all the means I could be advised or directed to ineffectual for either, till, by the advice of Dr. Benjamin Whichcot and Dean Rust, I applied myself to Mr. Greatrakes for help upon Saturday was seven-night, being the latter end of March, and who then stroked me; upon which I was very much worse, and enforced to keep my bed for five or six days; but then being stroked [twice since, by the blessing of God upon Mr. Greatrakes' endeavours, I am perfectly eased of all pains,

* DR. HENRY STUBB, *Miraculous Conformist*, ed. 1666.

and very healthy and strong, insomuch as I intend (God willing) to return home toward Cambridge to-morrow morning, though I was so weak as to be necessitated to be brought up in men's arms, on Saturday last about eleven of the clock, to Mr. Greatrakes. Attested by me this tenth day of April, 1666. I had also a hard swelling in my left arm, whereby I was disabled from using it; which, being taken out by the said Mr. Greatrakes, I am perfectly freed of all pain, and the use thereof greatly restored. "ANTHONY NICHOLSON.

"In the presence of Andrew Marvell, Jas. Fairclough, Thos. Elwood, Tho. Posley, W. Popple."

The popularity of Greatrakes was, however, as rapid in decline as Jonah's gourd. The wits pelted him with epigrams, to which he could make no apt reply. His Puritan profession was caricatured as the hypocrisy of a religious fanatic; and the enemies whom his success raised up denounced his method of practice as offensive to the sensibilities of pure-minded women. His boast that he never accepted a fee for his services was contradicted by the assertion that a single individual had given him as much as one hundred pounds. There was probably no truth in any of these statements, but they proved sufficient to prick the bubble of the Irishman's reputation; and, discredited and humiliated, he retired to his small estate at Affane. How far he was self-deceived, or how far he was consciously an impostor, are questions which it is not easy to determine; but all experience shows that the fanatic who is at first the dupe of his own imagination ends by duping others. At the outset he is honest in his pretensions, but the credulity with which they are received leads him on to expand and support them even after he has ceased to put faith in them himself.

The seventeenth century produced a crop of believers in, or professors of, the efficacy of Animal Magnetism. Van Helmont and Baptista Porta distinguished themselves by

their enthusiasm. Van Helmont, however, put forward some original ideas. The function of medicine, he said, was to regulate the *archæus*, an immaterial principle of life and health, to which, as a follower of Paracelsus, he attributed a mysterious being and efficacy. Its seat was in the stomach, and it might be reached either by a scheme of diet or through the imagination. Sebastian Wirdig, professor of medicine at the University of Rostock, in Mecklenburg, wrote, and presented to the Royal Society of London, then in its infancy, a book on "The New Medicine of the Spirits," in which he maintained that a magnetic influence was being constantly interchanged, not only between the celestial and terrestrial bodies, but between all living things. Magnetism, he said, was the dominant principle of the world—it preserved life, it brought about death. Then William Maxwell, whose works were printed at Frankfort in 1679, took up the teaching of Paracelsus, and endeavoured to simplify it for the benefit of the "profanum vulgus." To the influence of the imagination he alludes in the following passage:—"If you wish to work prodigies, abstract from the materiality of beings; increase the sum of spirituality; awaken the spirit from its slumbers. Unless you succeed in one or other of these things, unless you can bind the idea, you can never accomplish anything good or great."

The animal magnetists refer to the Convulsionaries of St. Medard, as an illustration of the efficacy of their favourite science. These people assembled in great numbers round the tomb of their beloved saint, the Jansenist priest Paris, and instructed one another how to fall into convulsions. They believed that St. Paris would restore them to health and vigour; and the approaches to the tomb were soon blocked up by crowds of feeble-minded men and hysterical women, who stimulated each other to excesses of excitement, until they fell into fits, while others, apparently in full possession of their

faculties, voluntarily exposed themselves to tortures which, in any other circumstances, would have proved mortal. The scenes that ensued were worthy of the orgies of the ancient "Mysteries"; superstition and uncleanness displayed their most hideous side. And, as is always the case, under the pressure of a wild excitement which stimulates the mind to break through the conventional decencies of society, women were the worst—the most intemperate and the most irreverent. Some of them showed a mad delight in being trampled upon and beaten. Montigro speaks of one whom the hardest blows seemed unable to satisfy. While a man of herculean strength was raining blows upon her with a heavy bar of iron, she never ceased to urge him to throw into them greater vigour. "Well done, brother!" she cried, "well done! Oh, how pleasant it is! What good you are doing me! Courage, my brother, courage; strike harder—harder—harder still!" Another woman laid herself down, silent and tearless, on a red-hot brazier, whence she received the name of the Salamander. But it is unnecessary to produce further illustrations of this deplorable delusion.

In the eighteenth century, the German visionaries became the prophets of Magnetism; and Father Hell, the Jesuit professor of astronomy in the University of Vienna, acquired a great reputation by his magnetic cures. About 1792, he invented steel plates of a peculiar pattern, which he applied to the naked body as a cure for various diseases. Two years later he communicated his system to Anthony Mesmer, who improved upon it, and developed a new theory, which is known as Animal Magnetism or Mesmerism.

ANTHONY MESMER.

Frederick Anthony Mesmer was born at Merseburg, in Suabia, in May, 1734. He studied medicine at the University of Vienna, where he took his degree of M.D. in 1766; the

subject of his inaugural dissertation, "The Influence of the Planets upon the Human Body," showing the drift of his inclinations towards the empirical in science. He maintained, with a good deal of rhetoric, that the sun, moon, and fixed stars mutually affect each other in their orbits; that they cause and direct in our earth a flux and reflux not only in the sea, but in the atmosphere, and affect in a similar manner all organized bodies through the medium of a subtle and mobile fluid, which pervades the universe, and associates all things together in mutual intercourse and harmony. This influence, he said, was specially potent over the nervous system, and produced two conditions, which he called *intrusion* and *remission*; these, in his opinion, were the cause of the different periodical revolutions observable in several maladies.

Having made the acquaintance of Father Hell, he proceeded to experiment with the Father's magnetic plates, and was greatly astonished at the marvellous cures which they accomplished. Mesmer reported the results to Father Hell, who published them as the outcome of his own invention, and referred to Mesmer as a physician employed to do this work for him. Mesmer's vanity, which was enormous, took fire at so slighting a reference. He boldly claimed the invention as his own, and accused Father Hell of a gross and dishonourable breach of confidence. The reader knows what a terrible thing it is when men of science quarrel! The contentions of literary men seem as nothing in comparison. The verbal war between Hell and Mesmer waged hotter and fiercer, and engaged the attention of all Vienna. Eventually, Hell vindicated his claim to the invention of the metallic heal-alls; but Mesmer showed no sign of defeat, and, continuing in the path he had trodden so far with success, he at length developed his doctrine of Animal Magnetism.

One of his patients, a young lady of the name of Esterline, suffered much from a convulsive disease. The attacks

were periodic, and attended by a rush of blood to the head, followed by delirium and syncope. He succeeded in reducing these symptoms under his system of planetary influence, and fancied he could forecast the periods of *accession* and *remission*. Such being, in his opinion, the origin of the disease, he hit upon the idea that a certain cure could be accomplished, if he could satisfactorily establish what he had long believed, that there existed between the bodies which compose our globe an action equally reciprocal and similar to that of the heavenly bodies. If it were so, he would be able to imitate artificially the periodical revolutions of the flux and reflux already mentioned. He soon convinced himself of the existence of this action. He then tried Father Hell's plates, but soon afterwards discovered that he could produce the same effects without them—simply by passing his hands down towards the patient's feet, even at a considerable distance.

Mesmer's theory was complete; and inflated with his senso of its wonder-working character, he communicated it to all the learned societies in Europe, and requested them to investigate it. The only one that replied was the Academy of Sciences of Berlin, and its reply was of a nature to have awakened him from his delusion, had not his confidence in himself and his system been so great. Not a whit shaken, he expounded to all who would listen to his leading idea, that the whole universe was pervaded by the magnetic matter or fluid—that it was present in every human body, which could, of its own volition, communicate its superfluity to another. "I have observed," he wrote, "that the magnetic is almost identical with the electric fluid, and that it may similarly be propagated—that is, through intermediate bodies. Steel is not the only suitable substance. I have magnetized paper, bread, wool, silk, stones, leather, glass, wood, men, dogs—in short, everything I have touched; to such a degree, that these substances produced the same effects as the loadstone

on diseased persons. I have charged jars with electric matter in the same way as is done with electricity."

Mesmer had to experience the truth of the Scriptural saying, that a prophet finds no honour in his own country. In Vienna his pretensions were derided or received with polite incredulity; and his treatment of Mademoiselle Cœsterline did not raise his reputation as a physician. He resolved, therefore, to go in search of a more gullible or less cynical populace. In Switzerland he met with the notorious Gassner, who played the same rôle as Valentine Greatrakes, casting out devils and healing the sick by the laying on of hands. Mesmer readily admitted the genuineness of his cures, but attributed them to the action of his newly-discovered power of magnetism. Father Gassner handed over to him some of his patients, who, of course, under his influence, threw off their maladies; and Mesmer also manipulated some paupers in the hospitals of Berne and Zurich, curing, according to his account, a case of ophthalmia and another of gutta serena. With these honours upon his brow, he returned to Vienna, intent upon demolishing opposition and establishing the efficacy of his system.

But misfortune again befell him. He undertook to cure a Fraulein Paradis, who was quite blind, and suffered from convulsions. He magnetized her several times, and then declared that she was cured. She said—with an obstinate air of unbelief—that she was *not*; and one of the leading Viennese oculists reported that she was as blind as ever, while her family persisted that the convulsions returned as before. With sublime audacity Mesmer insisted that she *was* cured, and averred that his late patient and her family were conspiring to ruin his reputation—that the lady feigned blindness, and the family invented the convulsions.

This, however, was too much for the sober common sense of the Viennese, and Mesmer perceived that he must seek

some more promising sphere of action. He concluded that Paris, whose inhabitants, like the Athenians of old, were always seeking some new thing—Paris, with its impressionable and imaginative population—offered a fair prospect of success. He made his appearance there in 1778, and immediately began to recommend his theory to the principal physicians, who, however, treated it with indifference. He then hired a splendidly-furnished room in a leading thoroughfare, and announced that it was open to all persons desirous of testing the new natural force or element which he claimed to have discovered. A convert came forward—Mons. D'Eslon, a physician of great reputation—and his adhesion ensured the success, at all events for a time, of Animal Magnetism, or, as it was frequently called, Mesmerism. It became "the rage" in Paris—it was the latest novelty, and one of so striking a description that the interest excited in it spread to all classes. Besides, people were not unnaturally fascinated by a system which promised, rapidly and painlessly, to restore them to perfect health! Mesmer was not deficient in the advertising faculty, and hastened by various ingenious devices to maintain and deepen the impression he had produced. Fees came in so copiously—it is said that in one year he received four hundred thousand francs—that he was able to launch out into an enormous expenditure. His house was furnished with the utmost luxuriousness, and in such a way as to appeal to the imagination of his patients. His spacious *salons* blazed with gorgeous mirrors, and were lighted by day with reflections from stained glass windows "richly dight," by night with a thousand tapers and swinging lamps. Luxurious carpets deadened the footfall; fragrant fumes of incense ascended from the rare porcelain vases which crowded the chimney-pieces; marble statues stood conspicuous against a background of velvet or tapestry curtains; and soft music stole from *Æolian* harps, which, at open windows, were touched by the

passing breeze. It was no wonder that Mesmér became the most popular man in Paris. He offered to everybody a bribe—to the afflicted he offered health; to the victim of *ennui*, a new sensation; to the scientific smatterer, a pretty psychological puzzle; to the intriguing butterfly of fashion, a pastime; and to the *débauché* the sensual gratification of watching the convulsive and unrestrained movements of lovely women.

His *modus operandi* was ingeniously calculated to appeal to the imagination or move the senses.

In the middle of the principal *salon* was deposited an oval vessel, about four feet in its major diameter, and one foot in depth. This receptacle contained a number of wine bottles, filled with magnetized water, well corked, and disposed in order, with their necks outwards. The vessel was filled almost to the brim, and iron filings were thrown into it at intervals, to increase, it was said, the magnetic effect. An iron cover, called the *baquet*, perforated with many holes, completed the apparatus—a long moveable rod of iron issuing from each aperture, for the patients to apply to the diseased parts of their bodies. The patients sat round the vessel, holding each other's hands, and pressing their knees together as closely as possible, in order to facilitate the circuit of the magnetic fluid.

The assistant magnetizers then entered—stalwart and handsome young men—who were supposed to pour into the patient from their finger-tips a fresh supply of the magnetic fluid. They embraced the patients between the knees, rubbed them gently down the spine and along the course of the nerves, and pressed gently on the bosoms of the females, while fixing them with a magnetic glance from their eyes—in anticipation of the Ancient Mariner and the Wedding Guest in Coleridge's ballad. Meanwhile, no one was allowed to speak, but soft music was breathed from a concealed

harmonica or pianoforte, or at intervals a fine singer in an adjoining apartment uplifted her voice of melody. The effect of these artfully conceived appeals to the senses was quickly perceptible, especially upon the women, who were gradually worked up to a dangerous pitch of excitement. Some, says Dupotet, sobbed aloud and frantically tore their hair; others laughed themselves into hysterics; others screamed and shrieked until exhausted nature went off into a swoon. At the height of the frenzy, Mesmer, the Archimage of the scene, made his appearance. He was attired in a flowing robe of lilac-coloured silk, rich in gold embroidery; he carried in his hand a white magnetic rod; and he moved with a stately step and an imposing air of natural dignity. Those who were still sensible felt the tranquillizing influence of his calm gaze, and recovered their composure. The insensible he softly stroked upon the eyebrows and down the spine; with his magic wand he traced figures upon their breast and stomach, and before long they were restored to consciousness. Describing their sensations afterwards, they said that they could feel streams of cold or hot vapour pass through their frames, according as he waved his wand or his hands before them.

The sensation produced by these "experiments" or "orgies," as they were respectively described by friends and foes, was immense. They occupied the attention of all Paris, which divided itself into two great sections—Mesmerists and Anti-Mesmerists—and carried on the contention in *salons* and *cafés*, in the press and the pulpit, in private and in public. Their sensuous character bespoke for them the favour of the young nobles and the ladies of the Court, and even the Queen herself was said to believe in Mesmer. Acting upon the advice of M. D'Eslon, Mesmer invited the Faculty of Medicine to investigate his system, but he was careful to name the conditions under which the investigation was to be conducted. He proposed to select twenty-four patients, twelve of whom

he would treat magnetically, while the other twelve were to be treated according to the rules of orthodox medicine. To avoid misunderstandings, the Government was to be invited to name certain persons, not physicians, to act as assessors or umpires ; and he proposed that the object of the examination should be, not how he produced his effects, but whether they were what he represented them to be. That is, they were not to inquire into his method, but into its results. The Faculty objected to this limitation, because there could be no doubt that a number of cures were really accomplished ; but the point to be considered was, whether these cures were due to any regular system or definite principles which could always be formulated, or simply to the influence exercised upon the patients by a remarkable personality and ingeniously-devised external influences.

Mesmer next appealed to the Queen, in the hope of securing through her the protection of the Government. He asked that a château and a suitable estate might be settled upon him, in order that he might prosecute his researches untroubled by the machinations of his persecutors—among whom he included, of course, all independent inquirers. It was, he said, the duty and privilege of Governments to encourage men of science, and if the French Ministry refused him its support, he must carry his great discovery to some more enlightened land, where its value would be frankly recognized. He knew that in her Majesty's eyes a sum of 400,000 or 500,000 francs, spent for a good purpose, was of no moment ; that her sole thought was the welfare and happiness of her people ; and he concluded by saying that his discovery ought to be rewarded with a munificence worthy of the sovereign whom it was his privilege to admire. After much discussion, the Government offered this magnificent charlatan a pension of 20,000 francs, and the Cross of the Order of St. Michael, if he would communicate his discovery

to physicians nominated by the King. This was a sufficiently fair stipulation, and if Mesmer had been in earnest, he would unquestionably have agreed to it. But he affected to take umbrage at the want of confidence displayed; demanded an immediate recognition of his discovery, though he had never yet defined it; and betook himself to Spa, to drink the waters, and restore the health which, he alleged, had been impaired by his devotion to Science.

It was then that the Faculty of Medicine, for the third and last time, called upon M. D'Eslon to abandon the heresy of Animal Magnetism, on penalty of expulsion. This was an arbitrary proceeding which D'Eslon was justified in resenting; and he publicly re-asserted his belief in the system, declared that he had discovered new secrets, and challenged an impartial examination. The Government at length decided upon appointing two commissions of inquiry (March, 1784), one composed of members of the Faculty of Medicine, another of members of the Académie des Sciences. Among the former were the physicians Majault, Salton, Darcet, and Guillotin; among the latter were men of such indisputable competency as Benjamin Franklin, Lavoisier, and Bailly, the astronomer. Mesmer was invited to appear before the latter, but excused himself on various pretexts. D'Eslon, however, who was honest in his professions, attended the sittings regularly, and performed such experiments as were required.

Bailly, who afterwards drew up and published the report of the Commissioners, has described with much minuteness the phenomena or manifestations of which they were witnesses. His description is interesting enough to justify us in reproducing it:—

“The patients, arranged in great numbers and in several rows around the *baquet*, receive the magnetism through all the following means: the iron rods which convey it to them from the *baquet*, the cords wound about their bodies, the connection

of the thumb, which conveys to them the magnetism of their neighbours, and the sounds of a pianoforte or of a pleasant voice, diffusing the magnetism in the air. They were also magnetized direct by means of the magnetizer's finger and wand moved slowly before their faces, above or behind their heads, and on the diseased parts, always observing the direction of the holes. The magnetizer acts by fixing his eyes upon them. But, above all, they are magnetized by the pressure of his hands upon the hypochondres and the abdominal regions—an application frequently continued for several hours.

“In these different stages, meanwhile, the patients present a picture of great variety. Some few are quite calm and tranquil, and feel no effect. Others cough, spit, experience slight pains and local or general heat, perspire freely. Others, again, are torn with convulsions. These convulsions are remarkable in regard to the number they affect, their duration, and their force. As soon as one person shows signs of being convulsed, others follow. The Commissioners have observed that in some cases the convulsions last upwards of three hours. They are attended with expectorations of a mud-coloured viscous fluid—brought away by violent efforts—in which streaks of blood are occasionally observed; and are characterized by the swift involuntary movement of all the limbs and of the whole body—by the contraction of the throat—by the leaping motions of the hypochondres and the epigastrium—by the dimness and wandering of the eyes—by piercing shrieks, tears, sobbing, and immoderate laughter. They are preceded and followed by a condition of languor or reverie, a kind of depression and sometimes drowsiness. The smallest sudden noise occasions a shuddering, and it was observed that a change of rhythm in the airs played on the pianoforte produced a great influence on the patients. They were more excited when the motion was quicker and the melody livelier, and their convulsions increased in vivacity.

“Nothing is more astonishing than the spectacle of these convulsions, and no one who has not seen them can form any just conception. The spectator is as much astonished at the profound repose of one section of the patients as at the agitation of the remainder; at the various incidents which are repeated, and the sympathies which are exhibited. Some of the patients may be seen devoting their exclusive attention to one another, rushing towards each other with open arms, smiling, soothing, and manifesting every sign of attachment and affection. All are under the magnetizer’s influence, no matter what their condition of drowsiness—the sound of his voice, a look, a movement of his hand, brings them out of it. Among the patients in convulsions, few, however, were men—the great majority were women.”

As soon as this investigation—which was prolonged over about five months—had begun, Mesmer hastily returned to Paris. He carried with him a handsome fortune; for while at Spa some of his wealthy patients had opened a subscription for his benefit, in one hundred shares of one hundred louis each, the condition being that each subscriber should be instructed in his system, and the subscription had been taken up so eagerly as to exceed the sum originally proposed by 140,000 francs. In Paris he resumed his practice, while his disciples went about the country, everywhere proclaiming him the greatest of men, and establishing in all the chief towns *Sociétés d’Harmonie* for the treatment of diseases by mesmerism. It is said that in some of these *Sociétés* the leading members were young and old *débauchés*, who contrived to make the experiments minister to the gratification of their worst passions.

The report of the Commissioners, when published, was distinctly adverse to Mesmer’s pretensions. It stated that the sole proof brought forward in support of the Animal Magnetism theory was the effects it produced on the human body;

that those effects could be produced without passes or other magnetic manipulations; that all these manipulations and ceremonies completely failed when performed without the patient's knowledge; and that, therefore, the phenomena exhibited were the result, not of magnetism, but of force of imagination.

Mesmer, soon after the publication of this damaging *exposé*, betook himself to England, with the very satisfactory amount in his pocket of 340,000 francs. He resided there for some time, under an assumed name, but eventually returned to his native place, and, in 1799, published a treatise on Animal Magnetism, which re-asserted his well-known views. He reached a ripe old age, and after seeing from his obscure abode the French Revolution pass through all its dramatic stages, died at Merseburg, on the 5th of March, 1815.

A couple of anecdotes may be related in illustration of the audacity of his charlatanism. He was asked on one occasion why he ordered his patients to bathe in river and not in spring water? He replied that river water was exposed to the sun's rays. His querist remarked that the river water, certainly, was in due course warmed by the sun, but not so much so but that Mesmer had sometimes to warm it further; why, then, should not spring water be preferable? "Sir," answered Mesmer, with sublime impudence, "water which is exposed to the rays of the sun is better than all other water, because it is magnetized. I myself magnetized the sun some twenty years ago!"

Everybody has heard of Madame Campan. She tells us that her husband having been attacked with pulmonary inflammation, Mesmer's attendance was requested. He felt the invalid's pulse, made a few inquiries, and then, with unblushing assurance, informed Madame Campan that the only way to restore her husband to health was to lay in his bed one of three things—a brown young woman, a black hen,

or a black bottle. Madame Campan preferred, very naturally, the use of the black bottle. It was tried, but without effect, and Monsieur Campan's illness became more serious. In great anxiety his wife left the sick room, and, during her absence, Mesmer bled and blistered his patient with good effect. However, when he recovered, Mesmer demanded and obtained from him a certificate that he had been cured by mesmerism.

THE MARQUIS DE PUYSEGUR.

Among the disciples of Mesmer who were not discouraged by his retreat from France was the Marquis de Puysegur, lord of a fine estate at Busancy. Thither he retired, after the Mesmeric exodus or *hegira*, accompanied by his brother, to experiment upon his tenants—who probably preferred Animal Magnetism to an increase of rent—and spread health and strength throughout the country side. The sick and afflicted hastened to the château in ever-increasing numbers, doubtlessly not uninfluenced by the fact that he not only magnetized but fed them. So it came to pass that within a circuit of some twenty miles he was soon reputed to be the fortunate possessor of a divine power. The Marquis prosecuted his researches with the keenest interest, and soon alighted upon a discovery which placed him far in advance of his great master, and made him the pioneer of Mesmerism as it is now understood. An accident revealed it. One day he had magnetized his gardener, and perceiving that he fell into a deep sleep or *coma*, he thought he would put a question to him as he would have done to a regular somnambulist. The man replied with the utmost distinctness and lucidity, to the surprise and pleasure of his master. Continuing the experiments suggested by this occurrence, he found that, in a condition of magnetic slumber, the sleeper's soul expanded, and was brought into closer communion with all nature, and more particularly with

the magnetizer. No additional manipulations were required—without speaking or making any sign, he was able to convey his will to the person mesmerized, and control or converse with him at his pleasure.

The Marquis was evidently fertile in resource and quick of invention. Patients came to him in such numbers that the process of magnetizing occupied all his time, and left him no opportunities for recreation or rest. What was to be done? He recollected to have heard Mesmer say that he could magnetize bits of wood; why should he not attempt to magnetize a whole tree! O man of admirable faith! The idea was no sooner conceived than realized. On the village green of Busancy flourished a patriarchal elm, in the shade of which sat the grey and wrinkled villagers, with their innocent potations, on summer evenings, and the lads and lasses of the village danced merrily upon their *jours du fête*. Thither the good Marquis repaired; no tree better suited to his purpose could anywhere be found. By touching and pressing it with his hands, and then retiring a few paces, so as to direct streams of the magnetic fluid from the branches towards the trunk, and from the trunk towards the roots, he magnetized it thoroughly; and he then caused circular seats to be erected round about it, and cords suspended from all its prominent branches. His patients, as they arrived, took their places, twisted the cords round the diseased parts of their bodies, and held one another tightly by their thumbs, so that a direct passage might be provided for the curative fluid.

Baron Dupotet, in his great work, *Introduction à l'Étude du Magnétisme Animal*, quotes some remarkable passages from the Marquis's letters, which show the amazing extent of his self-deception, and the infinite credulity of his patients. Thus, on one occasion, he writes: "I continue to employ the happy power which I owe to M. Mesmer. Every day I bless his name; for I am very useful, and do much good among

the sick poor in my neighbourhood. They crowd around my tree; there were more than one hundred and thirty this morning. It makes the best *baquet* possible; not a leaf of it but communicates health; all feel more or less its good effects. You will be delighted to see how charming a picture of humanity this presents! I have but one regret—that I cannot touch all who come. But my magnetized man [the gardener]—my intelligence—relieves me from anxiety. He teaches me the line of conduct to adopt. According to him, it is not at all necessary that I should touch any one; a look, a gesture, even a wish, is sufficient. And it is one of the most ignorant peasants of the country that teaches me this! When he is in a trance, I know no man more *clairvoyant*, prudent, and profound than he is.”

On another occasion he waxes eloquent in praise of this *clairvoyant* gardener, who, I suspect, was but a sorry knave, after all! “It is from this simple man,” he says, “this tall and burly rustic, only twenty-three years of age, oppressed by disease, or rather sorrow, and, therefore, the more inclined to be affected by any great natural agent, that I gain instruction and knowledge. When in the magnetic state, he ceases to be a peasant who can hardly utter a single sentence; he is a being for whom I can find no fitly descriptive name. I need not speak: I have but to think before him, and he instantly understands and answers me. Should any stranger enter the room, he sees it—if I wish it, but not otherwise—and addresses him, and says what I wish him to say; not, indeed, exactly as I dictate to him, but as truth impels him. When he would add more than I think it prudent for strangers to hear, I stop the flow of his ideas and of his conversation in the middle of a word, and give it quite a different direction.”

Among those who resorted to Busancy was M. Cloquet, the Receiver of Finance, who, being a very impressionable and credulous individual, eagerly accepted the wonderful narratives

of M. de Puysegur. He has left a record of what he saw, or fancied he saw, which the Baron Dupotet has drawn upon in his work on Animal Magnetism. Cloquet says that the patients whom he saw in the magnetic stage were apparently in deep and undisturbed sleep—a sleep of the body, however, not of the mind—for the intellectual faculties were all on the alert, while the physical faculties were, so to speak, in a state of suspended animation. The eyes were closed, the sense of hearing was abolished; the patient awoke only at the magnetizer's voice. If anyone touched a person so magnetized, or the chair on which he was seated, during his trance, it caused him great pain and suffering, and even threw him into convulsions. While this hypnotized condition lasted, he possessed an extraordinary and supernatural power; so that, by touching a patient presented to him, he could feel what part of his body was diseased, simply by passing his hand over the clothes. Cloquet notes it as a singular fact that the sleeper, who could thus detect diseases, see into other men's internal organs, and indicate remedies and modes of treatment, remembered nothing he had done or said, when he was awakened from his trance. And not only was the magnetizer able to make the mesmerized patient hear him, but by merely pointing his finger at him from a distance could make him follow him where he chose, and obey his every movement.

Magnetism was introduced into England in 1788, by Dr. Mainauden, who had been a disciple of Mesmer, and afterwards of D'Eslon. He made his first appearance in Bristol, where he delivered lectures and performed experiments with such success that people of fashion hurried from London to place themselves under his care or his tuition. The roll of his believers included a duke, a duchess, a marchioness, two countesses, an earl, a baron, three baronesses, a bishop, five right honourables, two baronets, seven M.P.'s, one clergyman, two physicians, seven surgeons, besides ninety-two ladies and

gentlemen of good position. In spite of what we are sometimes told by our public instructors, wealth, rank, and culture do not seem *always* to have been upon the side of enlightenment !

Removing to London, Mainauden proposed the formation of a Ladies' Hygeian Society. In his prospectus he claimed great credit for having introduced so valuable a curativo agency as Animal Magnetism into England. As it was not a system confined to one sex or dependent on a college education, and the fair sex being in general the most sympathizing part of the creation, and most immediately concerned in the care and health of its offspring, he thought himself bound, in gratitude for the partiality the ladies had shown him in midwifery, to contribute, as far as was in his power, to render them additionally useful and valuable to the community. Such was his purely philanthropic object in founding the Hygeian Society ; but as every lady who joined it was to pay a subscription of fifteen guineas, we shall do him no injustice in assuming that his own personal interest was not wholly lost sight of.

Mainauden soon found imitators and rivals : among others, Loutherbourg, the painter, and his wife, who performed their cures by the touch, and so awakened the curiosity of the town that at times as many as three thousand persons crowded to their house at Hammersmith (No. 13, on the Terrace). Loutherbourg himself was a simple, credulous creature, who became a disciple of Brothcrs the Prophet, abandoned his brush and easel, and took to prophesying. Not bearing in mind the sage advice, "never to prophesy unless you know," he came to grief ; for, angry at the failure of one of his predictions, a mob assembled and broke his windows. Loutherbourg took this very strong hint, and left off a vocation which evidently had its dangers. He died in March, 1812.

In 1789 was published "A List of a Few of the Cures performed by Mr. and Mrs. Loutherbourg, of Hammersmith

Terrace, without Medicine. By a Lover of the Lamb of God. Dedicated to His Grace the Archbishop of Canterbury." The motto was a verse from Acts xiii. : "Behold, ye despisers, and wonder, and perish: for I will work a work in your days in which ye shall not believe, though a man declare it unto you." The writer of this pamphlet, a silly old woman, named Mary Pratt, asserted that "Mr. De Loutherbourg has received a most glorious power from the Lord Jehovah, viz., the gift of healing all manner of diseases incident to the human body; such as blindness, deafness, lameness, cancer, etc." He also casts out evil spirits; and fever and gout he cures instantly. From Christmas, 1788, to July, 1789, Mr. De Loutherbourg told the writer that he "had cured, by the blessing of God, two thousand people, who had been made proper recipients to receive divine manuductions; which heavenly and divine influx, coming from the radix *God*, his Divine Majesty had most graciously bestowed upon them to diffuse healing to all, be they deaf, dumb, blind, lame, or halt."

Faith-Healing found its first distinguished professor in Prince Alexander Hohenlohe-Schillingsfürst, Roman Catholic Bishop of Sardica. He was born in Waldenburg in 1794; was educated at Vienna and at Berne; took holy orders in 1816; and made a great impression by the eloquence of his pulpit discourses. Dr. Wolff, who, in his "Travels and Adventures," repeats a good deal of unconfirmed scandal about him, admits that his exhortations at the bedside of the sick and dying, and his treatment of them, were "wonderfully beautiful," and that "when he mounted the pulpit to preach, one imagined one saw a saint of the Middle Ages." His devotion, he adds, was penetrating, and commanded silence in a church where there were four thousand people collected.

In 1820, when he was twenty-six years old, he met with a peasant at the village of Wittighausen, in Baden, who had

effected several miraculous cures of diseased persons by the force of his devotions. He was a man of unquestionable piety and honesty, who put forward no claim to special sanctity, but declared that the cures depended wholly on the faith of the patients and on the Divine Power. He would not accept any kind of payment, but invariably advised his patients to pray without ceasing, and lead holy lives.

The Prince, who was much impressed by the man's sincerity and earnestness, was afterwards on a visit to Würzburg, and finding that the Princess Mathilde Schwarzenberg, a cripple almost from her birth, had been declared incurable by the most eminent surgeons in Vienna, Paris, and Würzburg, he obtained permission to summon the Baden peasant. On the morning of June 20, 1821, the Prince repaired to the Princess's house, and having spoken to her of the potency of faith, and the wonders accomplished by Michel's prayers, he asked her if she would submit herself to the experiment, at the same time warning her that it would fail unless she had absolute confidence in God's mercy. She replied that she had absolute and entire faith, and was eager to try the new remedy. Michel was then introduced. According to the Princess, who wrote an account a day or two afterwards of what took place, he knelt down and prayed in German, aloud and distinctly, and, after his prayer, he said to the Princess, "In the name of Jesus, stand up. You are whole, and can both stand and walk!" Michel and the Prince then retired into an adjoining room, and the Princess rose from her couch, without assistance, in the name of God, well and sound, and so remained until her death.

The town was soon alive with the news of this miraculous recovery. Her physician, Dr. Heine, on hearing of it, hastened to her house, and stood silent and amazed at the scene before him. The Princess descended the stone staircase towards the garden, but hesitated, and instead of entering the

garden, returned upstairs, leaning upon Prince Hohenlohe's arm.

The following day was Corpus Christi; and great was the agitation of the public when the crippled Princess, who for more than a year they had been accustomed to see carried into her carriage, and lifted out of it into church, walked thither, and afterwards enjoyed a ramble in the palace gardens. Next day she visited the hospital; and on the 24th, made several visits, and went to the parish church to hear Prince Hohenlohe preach a sermon. There could be no doubt as to the completeness of her cure.

But it is only fair to say that the Princess's physician, Dr. Heine, gives a different complexion to the case. He does not seem to deny that some real effect was produced by the agency of the peasant, but reduces it to a minimum, asserting that his patient had previously recovered, to a certain extent, her locomotive power. Through an apparatus of his invention, steadily applied, she had been able to assume a vertical position, and to raise and depress her feet, and go through all the motions of walking. The extremities had, in every position, retained their natural muscular powers and movements, and the contraction was simply a nervous affection.

The fact, however, remains that on the 19th of June, when he visited her, she could not walk; whereas, on the 20th, he admits she was able to do so, though "with short and somewhat uncertain steps."

The police now interfered—though why, it is difficult to see, for even if a miracle had been wrought, it was hardly an offence against any municipal regulation! They required the Prince to furnish them with authoritative information of what he had done, and by what right he had done it. He replied that he had done nothing; that the work had been accomplished by faith and the Almighty Power. The instantaneous cure of the Princess was an indisputable fact—it was the result of a living faith.

With this reply the police, apparently, were satisfied. The peasant Michel returned to his quiet village; and the populace, forgetting, or not knowing, his share in the matter, turned to Prince Hohenlohe as the wonder-worker. The Prince accepted the position, and began to practise "faith-healing" on an extensive scale. His success was extraordinary. He made the deaf to hear, the blind to see, the lame to walk. Of some of his cures, which Dr. Tuke—no credulous or ignorant authority—accepts as genuine, the following are well-authenticated:—

"The Prince had dined at midday with General von D—. All the entrances to the house from two streets were blocked by hundreds of persons, and they said that he had already healed four individuals crippled with rheumatism in this house. I convinced myself on the spot that one of these cases was genuine. The patient was a fisherman's young wife; she was crippled in the right hand, so that she could not lift anything with it, or use it in any way; and all at once she was enabled to raise a heavy chair with the previously powerless hand, and hold it aloft. She went home, weeping tears of joy and gratitude.

"The Prince was then solicited, and consented, to go to a house at the other end of the town. He found there several paralytics. He began with a poor man whose left arm was rigid, and quite useless. After he had asked him if he had perfect faith, and received a satisfactory answer, the Prince prayed with folded hands and eyes closed. Then he raised the kneeling patient, and said, 'Move your arm.' Weeping, and trembling in all his limbs, the man obeyed; but, as he obeyed with difficulty, the Prince prayed again, and said, 'Now move your arm again.' This time the man moved it easily—forwards, and backwards, and upwards. The cure was thorough. So was it with the next two cases. One was a tailor's wife, named Lanzamer. 'What do you want?' asked the Prince,

who was bathed in perspiration. Answer: 'I have had a paralytic stroke, and have lost the use of one side of my body, so that I cannot walk unsupported.' 'Kneel down!' But this could not be effected without difficulty, and it was rather the tumbling down of an inert body—very painful to see. I never beheld a face more full of expression of faith in its strongly-marked features. The Prince, deeply moved, prayed with intense fervour, and then said, 'Stand up!' The good woman, greatly agitated, was unable to do so, in spite of all her efforts, without the assistance of her boy, who stood beside her, crying, and then her lame leg seemed to crack. When she had gained her feet, he said, 'Now walk the length of the room without pain.' This she endeavoured to do, succeeding with difficulty, though the pain had almost disappeared. He prayed a third time, and the healing was complete; she walked lightly and painlessly up and down, and, finally, out of the room; the boy crying more than ever, but this time with joy, and exclaiming, 'O my God! mother can walk! mother can walk!' While this was going on, an old woman, called Siebert, a bookbinder's wife, who had been brought in a sedan-chair, was admitted into the room. She suffered from paralysis and incessant headaches that left her neither night nor day. The first attempt made to heal her failed. The second brought on the paroxysms of headache in an intensified form, so that the poor creature could hardly keep her feet or open her eyes. The Prince began to doubt her faith, but when she assured him of it he prayed again with redoubled earnestness. And, all at once, she was cured. This woman left the room, conducted by her daughter, and all present were filled with astonishment."

At the Julius Hospital the Prince failed; perhaps because he was fettered by the conditions imposed, which were of a kind to interfere between himself and the patients, or because the diseases were of too complex a character to be influenced

by any stimulus applied to the imagination. He possessed, of course, no miraculous or exceptional power of healing; and his success depended on the susceptibility of those who applied to him, and the nature of their maladies. Afterwards he went to Bamberg, where a large number of patients eagerly awaited his advent. The Burgomaster interposed, however, and forbade his taking any action until the authorities at Baireuth had been informed of his arrival, and a commission of physicians and men of influence had been appointed to supervise the experiments. This was done; and again the Prince failed. At the Baths of Brückenau, it is said, he was more successful. Thence he went to Vienna, but, meeting with a cold reception, he went on to Hungary, and visited his maternal relations, who were people of rank and wealth. Sick people applied to him to exercise his powers in their behalf; but these seem to have deserted him, or he had been deprived of the necessary self-confidence by the rebuffs he had experienced and the failures he had made. At all events, he abandoned his profession as faith-healer, and devoted himself to pastoral duties—to preaching eloquent sermons—to the composition of manuals of devotion. He was made Canon of Grosswardein; in 1829, Provost of the Cathedral; in 1844, titular Bishop of Sardica; and in 1849 he died, at Böslau, near Vienna, aged 55.

In 1798, another experiment was made on the credulity of the public. An American, named Benjamin Douglas Perkins, practising as a surgeon in Leicester Square, invented and patented his notorious "Metallic Tractors." These were two small pieces of strongly magnetized metal, which, he said, if applied externally to the diseased part, and moved gently to and fro, would cure gout, rheumatism, palsy, and almost every malady incident to humanity. By a skilful process of advertising they were brought into notice, and speedily some wonderful instances of their curative power crowded his rooms with eager applicants for the tractors (five guineas a pair).

The paralytic, the gouty, the rheumatic, lifted up their hearts and were glad, because of this marvellous new cure. As Perkins was a member of the Society of Friends, he secured the support of his co-religionists, who, in order that the poor might share in the benefit of his discovery, subscribed a large sum for the erection of an hospital, called "The Perkinian Institution," in which all invalids might be magnetized free of cost. The tractors came very rapidly into general use, and their inventor was making a considerable fortune, when Science rudely interfered, with its cruel habit of tracing effects to their primary causes.

Dr. Haygarth, an eminent physician of Bath, though not denying the genuineness of Perkins's cures, strongly doubted the efficacy of "the metallic tractors," and felt convinced that Imagination was the real agent. He therefore suggested to Dr. Falkoner, a brother physician, that they should make some wooden tractors, paint them to resemble the American's patents, and then test their efficacy. Four patients from the hospital suffering respectively from chronic rheumatism in the hip, wrist, knee, and ankle, and one afflicted with gout, were chosen as subjects; and on the day fixed for the experiment Dr. Haygarth and his friends assembled and, with much impressive ceremony, produced and applied the imitations. Four out of the five immediately pronounced themselves free from pain; the gouty sufferer felt greatly relieved, and enjoyed an interval of rest for nine hours, but when he went to bed the torture returned. Next day the metallic tractors were employed, with results exactly similar.

To make assurance doubly sure, the experiment was repeated, a week or two later, in the Bristol Infirmary, on a man who suffered so severely from rheumatism in the shoulder as to be unable to lift his hand from his knee. The wooden tractors were applied to the afflicted part, while one of the physicians in attendance solemnly drew his watch from his

pocket and minutely recorded the time, while another, with pen in hand, wrote down the patient's symptoms as they in due course appeared. Marvellous power of imagination! In less than four minutes the man was so much relieved that he raised his hand several inches without a twinge!

In an interesting little volume, entitled, "Of the Imagination, as a Cause and Cure of Disorders, exemplified by Fictitious Tractors," Dr. Haygarth gave an accurate account of his experiments, and the *exposé* naturally stopped the sale of Perkins's five-guinea pieces of metal. The Perkinian Institution was shut up for lack of funds; and Perkins betook himself to Philadelphia, to live in ease and affluence on the metallic products of his metallic tractors.

During the early years of the nineteenth century, the tramp of Napoleon's armies across the devastated fields of Europe silenced the voices of the fanatics and knaves who had found in Animal Magnetism a new science of health or a new method of trickery. But, in 1813, the public interest was revived by M. Deleuze, with his "*Histoire Critique du Magnétisme Animal*," a "Critical History," so named, we suppose, on the *lucus à non lucendo* principle, for it is the work of an infatuated believer and not of a sober critic. Neither Mesmer nor Puysegur had ever advanced more extravagant claims for the efficacy of the magnetic principle, or stated its effects in more glowing colours. According to Deleuze, a certain mysterious fluid is continually emanating from the human body and forming a circumambient atmosphere, which, however, so long as its current is not determined, fails to operate on surrounding individuals. But it is capable of being acted upon by the will, and is then sent forth in currents with a force proportioned to each person's individual energy. Its motion resembles that of the rays from burning bodies; and in different persons it possesses different qualities. It is found in trees also. The magnetizer's volition, guided by a motion of the hand, several

times repeated in the same direction, can fill a tree with the magnetic fluid. Usually, when from the magnetizer's body and by his will this fluid is poured into a patient, the latter experiences a sensation of heat or cold. Occasionally he falls into a state of somnambulism, or magnetic ecstasy; and then he sees the fluid encircling the magnetizer like a luminous halo, and issuing in streams of light from his mouth and nostrils, his head and hands, breathing a most agreeable fragrance, and communicating a particular flavour to food and water.

When magnetism produces somnambulism, says M. Deleuze, the person who is in this state acquires a wonderful extension of all his faculties. Several of his external organs, especially those of sight and hearing, become inactive; but the sensations dependent upon them still take place internally. Seeing and hearing are still carried on by the magnetic fluid, which transmits the impressions instantaneously, and unimpeded by any nerve or organ, straight to the brain. So that the somnambulist, though his eyes and ears are closed, not only sees and hears, but sees and hears much better than he does when awake. In all things he experiences the will of the magnetizer, although that will be not expressed. He sees into the interior of his own body, and into the most secret organization of the bodies of all who are brought into magnetic relations with him. As a rule, however, he sees those parts only which are disordered and diseased, and intuitively prescribes a remedy for them. He has prophetic visions and sensations, which are generally true, but sometimes erroneous. He attains an extraordinary power of eloquent expression. In short, for the time he becomes a more perfect creature, if wisely guided by the magnetism, but goes astray if he be ill-directed.

M. Deleuze lays down certain rules by which every man may become his own magnetizer, and afterwards elaborately details the *modus operandi* to be adopted by the magnetizer when he wishes to act upon others.

He must remove from the patient all persons who might be troublesome to him, keeping with him only the necessary witnesses, or, better still, a single witness, whom he will request not in any way to interfere with the processes employed or their effects, but to unite with him in the desire to do good to the patient. He must take care that he is neither too hot nor too cold, and that there is nothing to impede the freedom of his movements or to interrupt the continuity of the *séances*. The patient must then be seated as comfortably and conveniently as possible, with the operator in front of him, on a little higher seat, in such a manner that the knees of the patient may be between his, and the patient's feet at the side of his. The patient is requested to compose himself; to think of nothing; not to confuse or worry his mind by examining the effects produced; to banish all apprehension; to surrender himself to hope, and to feel no discouragement if the magnetic action should cause him temporary pain. The operator, after he has collected his faculties, takes the patient's thumbs between his fingers in such a way that their inner part shall be in contact with the inner part of his own, and fixes his eyes upon him. In this situation he remains from two to five minutes, or until he feels an equal heat between his thumbs and his patient's. Next, he withdraws his hands, removing them to the right and left; and at the same time turning them till their inner surface be outwards, raising them simultaneously as high as his head. Placing them on the patient's shoulders, he suffers them to remain there for about a minute; afterwards, drawing them gently, with a very slight touch, along the arms to the tips of the fingers. This "pass" must be five or six times repeated, the hands being always turned, and removed a little from the body before they are raised. They are then placed above the head; and after holding them there for an instant, the operator lowers them, passing them before the face, at the distance of one or two inches, down to the pit of the

stomach. There he allows them to rest for two minutes, putting the thumbs upon the pit of the stomach, and the rest of the fingers below the ribs. He will then descend slowly along the body to the knees, or rather, if he can do so without change of position, to the toes. These processes must be several times repeated in the course of the *séance*. Occasionally also, the operator will approach the patient, so as to place his hands behind his shoulders, in order to move them slowly along the spine and the thighs down to the knees or the feet. After the first passes, he may dispense with putting his hands upon the patient's head, and may make the subsequent passes upon the arms, beginning at the shoulders, and upon the body, beginning at the stomach.

It is evident that such a complicated series of processes, when brought to bear upon susceptible persons, and, more particularly, upon delicate and sensitive women, would naturally enough induce convulsions or hysteria; and when brought to bear upon the strong and healthy, would just as naturally send them to sleep.

M. Deleuze's work gave a new and powerful impulse to the practice of Animal Magnetism in France, and has become the recognized text-book of "the science." In 1814 were begun the "*Annales du Magnétisme Animal*," and soon afterwards followed the "*Bibliothèque du Magnétisme Animal*." One of the most celebrated and successful of the French practitioners was the Abbé Faria, the so-called *l'homme des merveilles*; but his experiments were, in reality, wholly independent of the magnetic principle. He placed the patient in an arm-chair, bade him close his eyes, and in a loud imperious voice uttered the single word—"Dormez!" He had no *baquet*, or magnetic bath; no wand; he used no manipulations; yet he induced, at will, the somnambulistic condition. He declared that during his period of practice he had been successful in five thousand instances.

The first really scientific explanation of these pretended phenomena was furnished by Mr. James Braid, an eminent Manchester surgeon, to whom we are indebted for the invention of the term "Hypnotism" (from the Greek word *υπνος*, sleep). He detached them altogether from the semblance of power exerted by one individual over another, or through the agency of metallic plates or tractors, and referred them to the brain of the patient or subject, which he conceived to be acted upon by *suggestion*. His theory was afterwards taken up and developed by Dr. Carpenter, and is, we believe, universally accepted by scientific men. We know that through habit and various external circumstances, ideas become *associated* in our minds, so that when one is awakened, a whole train is immediately set in motion.

"Wake but one thought, and lo, a million rise!"

This is *internal* suggestion. But impressions from without which originate and modify these trains constitute *external* suggestion. While the mind is awake, and in its normal or healthy condition, the *will*—the power of volition—interferes with and guides the mental process, selecting some ideas for further consideration, and comparing them with others and with present impressions. A certain intermission of activity on the part of this selecting and comparing faculty, during which the natural flow of ideas meets with no let or hindrance, produces the mental condition called *reverie*, or *abstraction*. While we are dreaming, or in a somnambulistic state, our will and judgment seem to be completely suspended, and under its internal suggestions the mind becomes a mere automaton; while external suggestions, if they operate at all, operate only as upon a machine. These are well-ascertained psychological data, and they obviously help us to comprehend the phenomena of Mesmerism or Animal Magnetism.

We must also bear in mind the effect of concentrated

attention on any particular object in the way of deepening the impression that object produces. Physicians know that, in morbid conditions of the nervous system, the impression or idea received is sometimes so powerful as to overcome the evidence of the senses. We may think of a deceased friend, for instance, with such intensity as to place him bodily before us in a chair which we know to be empty. These *dominant* ideas dismiss the impressions of the outer world, and carry themselves out into action, independently of the *will*, and even of the *consciousness*, of the individual. Further, *expectant attention* has a powerful influence on the corporeal organs; so that we see and hear—or think we see and hear—what we expect to see and hear, and unconsciously employ some muscular action to produce.

Somnambulism, religious ecstasy, mesmeric trances, and similar phenomena, are all capable of explanation upon the principles here brought forward, which clearly prove that the individual, through his own ideas, participates in the action of the person influencing him. The voice, or touch, or movement of (for instance) the magnetic operator, suggest certain ideas to the subject or patient on which he unconsciously acts. In other words, the phenomena of magnetism, electro-biology, and the like, originate in the patient's physical and psychical condition, and not in any magnetic fluid or electrical current.

But, in connection with this subject, something must be said respecting "Faith-Healing," which of late has taken the place of Animal Magnetism. In the summer of 1885, it produced a temporary sensation in England—more particularly in the midland counties; and probably there are believers in it now. Some years ago, in the north of London, the Rev. W. Boardman practised Faith-Healing on quite a considerable scale. His establishment was called *Bethshan*; it was not an hospital, but "a Nursery of Faith"; and he and his coadjutors claimed to have cured some hundreds of cases of cancer,

chronic rheumatism, paralysis, advanced consumption, and so on. Their mode of operation was the scriptural one—anointing with oil and prayer.

The reader will remember the "cures" said to have taken place at Knock Chapel, in Ireland; and the pilgrimages, in 1872-75, to Lourdes, in France, the fame of which is entirely associated with the grotto of Massavielle, where the Virgin Mary was believed to have revealed herself to a peasant girl on several occasions in 1858. The gifts of devotees, in gratitude for the cure of diseases which had defied medical treatment, have rendered possible the erection of a large church above the sacred grotto.

In the United States, the chosen home of psychical and psychological manifestations of an abnormal character, Faith cures have always taken place on a large scale. The cure of disease without medicine was a leading tenet of the Perfectionist community founded by John H. Noyes. In 1857, certain "Millerists," or "Adventists," in the interior of Connecticut, asserted their possession of a power to heal diseases by prayer and without medicine, and, if they could attain sufficient faith, even to raise the dead. This parody on the resurrection they attempted in the case of a young lady who had died of fever, and they continued in prayer for her until decomposition set in, and the civil authorities—who never have any faith!—were obliged to interfere. Several times in the course of the year 1885 crazy fanatics repeated the attempt.

In 1859, a Dr. Newton visited Boston, and produced an immense sensation. The lame who became his patients leaped for joy, and threw their crutches away when they left his presence; in some instances the blind were made to see; cases of chronic disease were greatly relieved; and some astonishing results were reported that puzzled the ordinary—and extraordinary—practitioner.

Dr. Charles Cullis, of Boston, has long been celebrated in

connection with Faith-Healing; and Old Orchard, Maine, is as sacred a shrine in the estimation of his followers as Lourdes is in that of the Roman Catholics. The Rev. Mr. Simpson, an Independent minister in New York, has also been conspicuous within the last few years as a Faith-Healer, and his admirers have enabled him to open a house for the accommodation of patients.

As to the "cures" accomplished by these Good Samaritans, it seems impossible to doubt their genuineness; but we have no certain knowledge of the diseases which the Faith-Healers treated. These excellent persons, having no knowledge of anatomy or pathology, could not diagnose their patients with any pretence at accuracy; and the patients themselves would assuredly be ignorant of their true nature. It is easy to know *when* you are sick; but *why* you are sick, is a very different matter. Indigestion simulates a score or more of maladies; it affects the head and the brain, the eyes and the liver, even the lungs and the bronchial apparatus. It frequently produces symptoms of organic heart-disease. Liver complaints have often been mistaken, even by eminent physicians, for pulmonary consumption. Women are singularly subject to hysteria, in which condition they may firmly believe that they are suffering from disease of the spine, of the heart, and, indeed, of all the organs. Thus, then, the declaration of a patient that he or she has been cured conveys no information as to what he or she was cured of, at least in the case of internal maladies.

Then, as to *external* diseases, it is by no means easy to determine what they are. "Tumours," says Dr. Buckley, "are often mistaken for cancers, and cancers are of different species—some incurable by any means known to the medical profession and others curable. It is by these differences in cancers and in tumours that quack cancer-doctors thrive. When the patient has anything that looks like a cancer, they

promptly apply some salve, and if the patient gets well he signs a certificate saying that he was cured of a cancer of a most terrible character, which would have been fatal in three months or six weeks; or, when the quack doctor himself writes the certificate for the patient to sign, which is generally the case, the time in which the cancer would have proved fatal may be reduced to a few days. There is also a difference in tumours; some would under no circumstances cause death, others are as liable to become fatal as a malignant pustule."

We must take into account also, in estimating the value of the evidence as to these cures, that by a succession of witnesses the mind is heated and excited, the last witness introducing details which the first has forgotten or never known. The imagination expands, and indulges in an increasing exaggeration of expression. At a crowded meeting held in the Workmen's Hall, Adelaide, a Mrs. Morgan lifted up her voice and testified that for twenty years she had suffered from heart disease, but the moment "Mr. Wood laid his curative hands upon her, she felt a quiet within, and was conscious she was cured." The Rev. W. B. Shorthouse's evidence was even more wonderful. He described his prolonged state of debility, which had interfered with his ministerial duties, but affirmed that he was completely restored to health. Only two weeks before, he said, some of his congregation had told him that he looked like death. As he grew fervid and more fervid in his testimony, he spoke of several marvellous cures, one of a man brought in dead, who walked away without assistance. He had seen hundreds "touch the border of Mr. Wood's garment"; and finally concluded by saying he was himself "a living example of miracles greater than those performed by the disciples of Christ." Into this probably unconscious falsehood he had been impelled by the augmented warmth of his excited imagination.

But make what deductions we may for exaggeration, mis-

representation, suppression, ignorance, or deception, and not forgetting that often the relief or recovery was only temporary, the fact remains that most extraordinary cures have been effected, sometimes instantaneously, of diseases which had defied medical skill, or were known to be curable only after long periods of treatment.

With Dr. Buckley's assistance, we shall endeavour to indicate, with some degree of minuteness, the causes of these cures. The general principles we have already stated.

The first category includes cases where the curative element was a natural mental cause; where the cure or relief was the natural result of certain mental or emotional conditions. In the time of John Hunter it was established by experiments and by his own experience, that the concentration of attention upon any part of the human system affected first the sensations, then the circulation, next the nutrition, and finally produced a change in structure.

The second category includes cases wherein the operation of occult causes is claimed, as in Animal Magnetism, Mesmerism, and the like.

"About forty-five years ago, an itinerant lecturer on these phenomena, who had great success in experiments, used an old-fashioned cylinder electrical machine. The 'subjects' took hold of the wire. He gave them a slight electrical shock, and 'concentrated his will upon them.' Those that were susceptible passed into the trance state. On a certain occasion, when trying the experiment with several gentlemen in a private room, the operator was called out just as the candidates had taken hold of the wire. He remained twenty minutes, not supposing that the experiment was being tried; on his return, to his great surprise, he found three of them as much 'magnetized,' 'mesmerized,' 'electro-biologized,' 'hypnotized,' or 'psychodynamized' as any he had ever seen. This showed that the entire effect was caused by their own mental states."

To this category belongs the undoubted power of the African witch-doctors both to produce disease and to cure it, as well as the remarkable cures attendant on the enchantments and magical ceremonies in vogue among savage and semi-civilized peoples.

From these and similar cases Dr. Buckley draws the following inductions:—

1. That subjective mental states, such as concentration of the attention upon a particular part of the body, whether with or without belief, can produce effects either of the nature of disease or cure.

2. Active incredulity in persons not acquainted with these laws, but willing to be experimented upon, is often more favourable to sudden effects than mere stupid, acquiescent credulity. The first thing the incredulous, hard-headed man, who believes that "there is nothing in it," sees, that he cannot fathom, may lead him to succumb instantly and entirely to the dominant idea.

3. That concentrated attention, with faith, can produce very great effects; may operate powerfully in acute diseases, with instantaneous rapidity upon nervous diseases, or upon any disease capable of being modified by direct action through the nervous or circulatory system.

4. That cures can be wrought upon diseases of accumulation, such as dropsy and tumours of various kinds, with great rapidity, when the increased action of the various excretory functions can eliminate the accumulations from the system.

5. That rheumatism, sciatica, gout, neuralgia, contraction of the joints, and certain inflammatory conditions, may disappear under similar mental states suddenly, so as to admit of helpful exercise, which exercise, by its effect upon the circulation, and through it upon the nutrition of diseased parts, may produce a permanent cure.

6. That the "mind-cure," apart from the absurd philo-

sophy of the different sects into which it is already divided, and its repudiation of all medicine, has a basis in the laws of nature. The pretence of mystery, however, is either honest ignorance or consummate quackery.

7. That all are unable to dispense with surgery, when the case is in the slightest degree complex, and mechanical adjustments are necessary ; also that they cannot restore a limb, or eye, or finger, or even a tooth which has been lost. But in certain displacements of internal organs, the consequence of nervous debility, which are sometimes aided by surgery, they all sometimes succeed by developing latent energy through mental stimulus.*

* J. M. Buckley, M.D., "Faith-Healing and Kindred Phenomena," in *The Century*, 1886. In the foregoing pages reference has been made to Baron Dupotet, "Introduction à l'Étude du Magnétisme Animal" ; D. H. Tuke, M.D., "Influence of the Mind upon the Body" (1872) ; Deleuze, "Histoire Critique du Magnétisme Animal" (1813) ; James Braid, "Magic, Witchcraft, Animal Magnetism, Witchcraft, Hypnotism, and Electro-Biology" (1852) ; M. Charles Townshend, "Facts on Mesmerism" (1840) ; J. C. Colquhoun, "History of Magic, Witchcraft, and Animal Magnetism" (1851) ; Alfred Smee, "Electro-Biology" (1850) ; J. T. N. Rutter, "Human Electricity, its Means and its Development" (1854) ; and Dr. J. C. Passavant, "Untersuchungen über den Lebensmagnetismus und das Hellsehen" (1837).

CHAPTER IX.

ENGLISH PHYSICIANS OF THE SEVENTEENTH CENTURY.

THE history of English Medicine in the seventeenth century is illuminated by the great name of WILLIAM HARVEY, to whom Science is indebted for the discovery of the double circulation of the blood. The critical importance of this discovery will best be understood by a brief explanation of what it involves and implies.

The object of the circulation of the blood is to distribute over the whole organization of the human body the nutritive elements which are received through the mouth. For this purpose two mechanical arrangements are necessary. First, a proper disposition of the blood-vessels, which has happily been compared to the laying of the water-pipes in a populous city; second, the provision of a central engine or machine (the heart) for propelling the blood through these internal ducts. In the suggested comparison of the laying of water-pipes, a single system, however, is sufficient, because the water is simply *delivered*, not *brought back*; whereas, in the human body, a second system is required to return the blood to its source. The two systems are called *arteries* and *veins*. The machine which works them—that is, the heart—is a hollow muscle, and, by the contraction of its fibres, compresses together the four cavities into which it is divided, so as to force out of them any fluid they may contain. By the relaxation of the fibres these cavities are in turn dilated,

and, of course, are open to receive any fluid which may be poured into them.

Into the four cavities are inserted the great trunks both of the arteries which distribute, and of the veins which return, the blood. The arteries arise from cavities called *ventricles*; the veins flow into cavities named *auricles*. By the successive contractions and dilatations of these several cavities, all the blood in the body is passed through the heart about once in four minutes. But there is yet more to be said: by means of this apparatus two distinct circulations are carried on, for it is indispensable that the blood should come somewhere into contact with the air and be oxygenated, in order to purify it, and change its colour from dark to bright red. Hence the heart is, so to speak, a double organ with a double duty; two of its cavities being employed to maintain the general circulation, while two keep up the inferior circulation through the lungs, where the blood meets with the atmospheric air.

The discovery of this double circulation was made by Harvey; but, as in all great discoveries, the way had been partially cleared for him by his predecessors. Earl Russell has defined a proverb as the wisdom of many, and the wit of one. We may say, with quite as much truth, that a great discovery or invention is the labour of many, and the quick perception of one—the quick perception giving a practical result to previous investigations. Charles Etienne, or Carolus Stephanus, a member of the famous family of printers, was the first (in 1536) to observe and describe the valves in veins—the pouch-like folds of the inner wall of the vein, which are designed to impede the passage of any fluid from the heart towards the capillaries, while they do not interfere with fluid flowing in the opposite direction. These he called *apophyses venarum*. This discovery has been credited to Sylvius and Fabricius of Acquapendente; but a comparison

of dates confirms the claim of Etienne, though the others were working independently in the same direction almost at the same time. The doctrine of the pulmonary circulation was enunciated by Michael Servetus, in 1553, who conjectured that in the lungs, and not in the liver, the blood received its elaboration, passing from venous into arterial. As he and his book were burned through the action of Calvin, nothing more was heard of the pulmonary circulation, until it was re-discovered by Realto Columbus, who, in his treatise, "*De Re Anatomicâ*," 1572, affirmed that "the blood is carried by the arterial vein into the lungs, whence it passes, with the air, by the venous artery into the left ventricle of the heart;" adding that no one previously had noticed or recorded this fact, though it was most fit that it should be noticed by all. Then came Andreas Cæsalpinus, the great botanist, in 1593, with a similar statement, and for the first time introducing into medicine the phrase "*sanguinis circulatio*." It is evident, moreover, from the language he employed, that a vague idea was his of a two-fold circulation, for he says: "*In animalibus videmus alimentum per venas duci ad cor tanquam ad officinam caloris insiti, et, adeptâ inibi ultimâ perfectione, per arterias in universum corpus distribui*." The teaching of Columbus, as regarded the pulmonary circulation, was investigated and adopted by his pupil, Cæsar Arantius (1574). Finally, there seems reason to believe that the celebrated Fra Paolo Sarpi thought out for himself a theory of the circulation of the blood which approximated to the truth; but the system as we have it now, clearly defined in its means and consequences, remains unimpeachably the work of William Harvey. Of this honour it is impossible to deprive him:—

"The circling streams, once thought but pools of blood,
Whether life's fuel or the body's food,
From dark oblivion Harvey's name shall save."

WILLIAM HARVEY, 1578-1657.

William Harvey came of a reputable Kentish family, and was born at Folkestone on the 1st of April, 1578. At ten years of age he was sent to the Grammar School, Canterbury, whence he removed, in May, 1593, to Caius College, Cambridge. Having made good progress in the usual academical studies during a five years' residence, he went abroad, as was then very common, to acquire a knowledge of medicine, and at Padua became a pupil of the great professor of anatomy, Fabricius of Acquapendente. To this study Harvey brought a strong, luminous intellect and a wonderful tenacity of application; and having learned from his master the existence of valves in the veins of the body, he set to work to ascertain their use—an inquiry which he pursued patiently for many years.

Having taken his degree of M.D. at the early age of twenty-four, he returned to England in 1602, and having graduated also at Cambridge, settled down in London to professional practice. In 1604 he was admitted into the College of Physicians, and in 1607 elected Fellow. In the following year he succeeded Dr. Wilkinson as one of the physicians of St. Bartholomew's Hospital, and, finally, in 1615, at the age of thirty-seven, was appointed Reader of the Anatomical and Surgical Lectures of the College of Physicians. It was from the platform which this appointment provided that he first announced his great discovery; though for some years he continued to repeat his experiments and verify his observations before he ventured to publish their result to the world. Then was his the fate which has always befallen the discoverer or the reformer: malignant calumny and cold obstruction. Harvey felt the injustice of this treatment deeply, and complained to a friend that, after the publication of his great theory, his practice declined considerably, and he was derided as

crack-brained and arrogant; but neither injustice nor misrepresentation could check his ardour in the pursuit of knowledge. His patient genius eventually compelled success. Within twenty-five years of the publication of his system, it was accepted by all the universities of the world; and Hobbes remarks that Harvey was, perhaps, the only man who ever lived to see his own doctrine established in his life-time.* One of his disciples and admirers broke out into epigrammatic verse, saluting him as

"Thou who didst first behold
What dreams mistaken sages coined of old.
For till thy Pegasus the fountain brake,
The crimson blood was but a crimson lake,
Which first from thee did tide and motion gain,
And veins became its channel, not its chain.
With Drake and Cavendish thy bays are curled,
Famed circulator of the lesser world."

Harvey was fifty years old when his treatise "*On the Motion of the Heart and Blood*" (*Exercitatio de Motu Cordis*) was published at Frankfort (1628), with a dedication to Charles I. He probably selected that city as the place of publication, because, by means of its celebrated fairs, books were thence distributed rapidly throughout Germany and the greatest part of Europe. Its novel teaching was confirmed by the experiment of transfusing blood, tried on dogs, at the suggestion of Sir Christopher Wren, in 1657, which Lower repeated in 1661; while Malpighi, in 1661, and Leeuwenhoek, by the employment of microscopes, demonstrated the circulation of the blood in the smaller vessels, and rendered visible the anastomosis of the arteries and veins, upon which Harvey's theory depended.

As far back as 1618, Harvey had been appointed physician-extraordinary to King James I. In 1632, he was made phy-

* In our own age Charles Darwin has been thus fortunate.

sician to Charles I., who always treated him with distinguished favour, and was frequently present at his experiments in anatomical research. He had previously, by the King's command, attended the young Duke of Lennox in his travels on the Continent. In 1632-33 he again went abroad, accompanying the Earl of Arundel on his embassy to the Emperor. William Hollar, one of the Ambassador's suite, afterwards told Aubrey that, during the journey to Vienna, Harvey was incessantly diving deep into the woods, and taking note of strange trees and plants, earths and animals, with imminent hazard of being lost. So that "my Lord Ambassador would be really angry with him; for there was not only danger of thieves, but also of wild beasts." He explained his great theory to some of the leading physicians in the various German cities he passed through; and at Nuremberg gave a public demonstration of it, with which everybody, except Caspar Hofmann, was satisfied.

Returning to England, Harvey accompanied Charles I. on his journey to Scotland in 1633, and while the King and his Court were occupied in splendid festivities in the northern capital, made a boating voyage to the Bass Rock, of which, in his treatise "*On Generation*," he has left a picturesque account:—

"There is," he says, "a little island, the Scots call it Bass; it is not far from the shore, seated in the main sea, and standing upon a rugged and dangerous cliff (you may call it rather one great continued stone or rock than an island), it is not above a mile about. The superficies of this island (in the months of May and June) is almost covered quite over with nests, eggs, and young ones, that for their infinite abundance you can scarce set your foot in a spare place, and such a mighty flock hovereth over the island that (like thick clouds) they darken and obscure the day; and such a cry and noise they make, that you can hardly hear those that stand

next you. If you look down into the sea beneath you (as from a steep tower or precipice), you will see it all spread over with several sorts of fowl, swimming to and fro in pursuit of their prey, just as some ditches or lakes in the spring time are paved with frogs, or open hills and steep mountains are covered with flocks of sheep and goats. If you sail round the island, and look up into the several cliffs and caverns of it, you will find them all peopled and inhabited with several colonies of birds and fowl, of distinct kind and magnitude [the Solan goose]; more, indeed, than in a clear night, when the moon is absent, there are stars to be discovered in the firmament; and if you observe the several regiments of those that sally out and those that flock homewards at the same time, you would take them for an infinite swarm of bees. It is not to be imagined what a vast yearly revenue the lord of the island maketh of the plumes and the old nests (which are useful for firing), together with the eggs, which he boils, and then trafficketh away: that which he himself told me was indeed incredible."

It was by command of the King that Harvey dissected that remarkable example of longevity, Thomas Parr, who died on the 14th of November, 1635, at the reputed age of 153 years. Though this may very well be an exaggeration, we see no reason to doubt that he attained to a very exceptional old age. It is said that he was eighty-eight when he was married for the first time; that at 102 he did penance for an act of immorality; and that he took to himself a second wife at the age of 120. He had lived a very abstemious life, his daily fare consisting of coarse brown bread made of bran, rancid cheese, and sour whey; but being carried up to London by the Earl of Arundel, he fed high, drank wine, and died. Harvey's *post mortem* examination proved the general soundness of his organic structure, and that the cause of death was a pneumonia, caused by his change of diet and the impurity of the London atmosphere.

When the Civil War broke out, and the Parliament and the King compelled the people of England to take opposite sides, Harvey went with his royal benefactor, and was present at the Battle of Edgehill, in 1642. Prince Charles and the Duke of York were put under his charge, and while the clash and the clang of the fight filled the air, he retired with the two young princes under a hedge, took a volume from his pocket, and began to read, until a cannon ball striking the ground close beside him convinced him of the desirability of a remoter resting-place. Accompanying Charles to Oxford, he found there many friends and sympathetic fellow-workers, and leisure to pursue the studies in which his soul delighted. He spent much of his time in the chambers of George Bathurst, B.D., at Trinity College, making experiments upon newly-laid and half-hatched eggs, with a view to ascertain the processes of generation. "Eggs," he tells us, "were a cheap merchandise, and were at hand at all times and in all places; and it was an easy matter to observe out of them what are the first evident and distinct works of generation; what progress Nature makes in formation, and with what wonderful providence she governs the whole work."

At Oxford, in December, 1642, he was incorporated Doctor of Medicine; and in 1645, was appointed by the King Warden of Merton College, in succession to Dr. Nathaniel Brent, who had taken the Covenant and left the University. His loyalty merited this acknowledgment, for it had inflicted upon him a loss more intolerable than almost any other affliction could have been. His lodgings at Whitehall had been plundered, and some valuable papers, recording his observations and experiments for years, had disappeared. "Let gentle minds forgive me," he says, "if, recalling the irreparable injuries I have suffered, I here give vent to a sigh. This is the cause of my sorrow: whilst in attendance on His Majesty during our late troubles, and more than civil wars, not

only with the permission, but by the command of the Parliament, certain rapacious hands stripped not only my house of all its furniture, but what is subject of far greater regret with are, my enemies abstracted from my museum the fruits of many years of toil. Whence it has come to pass that many observations, particularly on the generation of insects, have perished, with detriment, I venture to say, to the republic of letters."

Oxford surrendered to the forces of the Commonwealth in 1646; and Harvey, compelled to resign his Wardenship at Merton, proceeded to London, and took up his residence with his brother Eliab, a wealthy merchant, who had everything handsome about him, including a town house in the Poultry and a country house at Roehampton. Afterwards he retired to a pleasant cottage of his own at Combe, where, to indulge his fancy of meditating in the darkness, he caused caves to be sunken in the ground, to which he retreated in the glare of summer noons. There he was visited, at Christmas, 1650, by his friend, Dr. Ent, who extorted his consent to the publication of his second great work, "*Exercitationes on the Generation of Animals.*"

"Harassed with anxious, and in the end not much availing cares," says Ent, "I sought to rid my spirit of the cloud which oppressed it, by a visit to that great man, the chief honour and ornament of our college, Dr. William Harvey, then dwelling not far from the city. I found him, Democritus-like, busy with the study of natural things, his countenance cheerful, his mind serene, embracing all within its sphere. I forthwith saluted him, and asked if all were well with him. 'How can it,' said he, 'while the Commonwealth is full of distractions, and I myself am still in the open sea? And truly,' he continued, 'did I not find solace in my studies, and a balm for my spirit, in the memory of my observations of former years, I should feel little desire for longer life. But so it has been, that this life of

obscurity, this vacation from public business, which causes tedium and disgust to so many, has proved a sovereign remedy to me.'” When Dr. Ent informed him that the scientific world ardently expected the results of his prolonged studies, he replied, “You know full well what a storm my former lucubrations raised. Much better is it oftentimes to grow wise at home and in private, than by publishing what you have amassed with infinite labour, to stir up tempests that may rob you of peace and quiet for the rest of your days.” Eventually, however, he consented to place in Dr. Ent’s hands his treatise on Generation, which duly appeared in the following year, and confirmed and strengthened the great reputation he had already acquired.

His love of his profession, and his profound interest in the College of Physicians, was shown in the munificence which prompted him to build and present to the College, with all its contents, a handsome Museum and Library (1653)—afterwards unfortunately destroyed in the Great Fire. The College, in acknowledgement of this enlightened liberality, decreed the erection of his statue, in white marble, to be placed in their hall: it represented him in his doctor’s cap and gown, and was inscribed, “Viro monumentis suis immortali.” And in 1654, it appointed him President; but he declined the office on account of his age and infirmities, though he continued to deliver the Lumleian lectures until July, 1656. He then bade farewell to his colleagues at a banquet which he gave them, and announced that he had settled on the College his patrimonial estate at Burmarsh, in Kent, for the following purposes:—a salary for the curator of his library and museum, and a provision for an annual feast, at which a Latin oration was to be delivered in commemoration of benefactors. The scope of the Harveian Oration, as it is called, has, however, of late been much enlarged.

Harvey closed his career of nobly useful labour on the 3rd

of June, 1657; and on the 26th, the Fellows of his College did honour to his memory by attending the removal of his remains to their last resting-place at Hempstead, in Essex.

Here is Aubrey's quaint description of the great anatomist's person:—"He was not tall, but of the lowest stature; round-faced, olivaster (like wainscote) complexion; little eyes, round, very black, full of spirit; his hair was black as a raven, but quite white twenty years before he died. I remember he was wont to drink coffee, which he and his brother Eliab did before coffee-houses were in fashion in London. He was, as all the rest of his brothers, very choleric, and in his younger days wore a dagger (as the fashion then was); but this doctor would be apt to draw out his dagger upon every slight occasion. He rode on horseback, with a foot-cloth, to visit his patients, his man following on foot, as the fashion then was."

His character is sketched by Dr. Aikin as in every respect worthy of his public reputation. "Cheerful, candid, and upright, he was not the prey of any mean or ungentle passion. He was as little disposed by nature to detract from the merits of others, or make an ostentatious display of his own, as necessitated to use such methods for advancing his fame. The many antagonists whom his renown and the novelty of his opinions excited were, in general, treated by him with modest and temperate language, frequently very different from their own; and while he refuted their arguments, he decorated them with all due praises. He lived on terms of perfect harmony and friendship with his brethren of the College, and seems to have been very little ambitious of engrossing a disproportionate share of medical practice. . . .

"It is certain that the profoundest veneration for the Great Cause of all those wonders he was so well acquainted with appears eminently conspicuous in every part of his works. He was used to say, that he never dissected the body of any

animal without discovering something which he had not expected or conceived of, and in which he recognized the hand of an All-Wise Creator. To His particular agency, and not to the operation of general laws, he ascribed all the phenomena of nature. In familiar conversation Harvey was easy and unassuming, and singularly clear in expressing his ideas. His mind was furnished with an ample store of knowledge, not only in matters connected with his profession, but in most of the objects of liberal inquiry, especially in ancient and modern history, and the science of politics. He took great delight in reading the ancient poets, Virgil in particular, with whose divine productions he is said to have been sometimes so transported as to throw the book from him with exclamations of rapture. To complete his character, he did not want that polish and courtly address which are necessary to the scholar who would also appear as a gentleman."

Harvey, it appears, was a great martyr to the gout, and his mode of treating it is thus described:—He would sit with his legs bare, even in the coldest weather, on the leads of Cockaine House (where he resided for some time with his brother Eliah), and put them into a pail of water until he was almost dead with cold. It may be remembered that Queen Caroline, the wife of George II., made use of a similar remedy.

SIR KENELM DIGBY, 1603-1665.

Sir Kenelm Digby, the contemporary of the learned Harvey, claims a niche in the history of the Healing Art, not as a physician, but as the advocate of "the Sympathetic Powder," a remedy, for the virtues of which he gave, as it were, a personal guarantee.* The secret of its composition

* He may claim a place, perhaps, on a more satisfactory ground, for, according to Sprengel, it was Digby who first showed the necessity in vegetation for oxygen, or vital air. Oxygen, as a separate gas, was dis-

was revealed, however, after its inventor's death by his chemist and steward, George Hartman; and any lingering belief in its efficacy was very quickly dispelled. English vitriol was dissolved in warm water; the solution was filtered, and then evaporated until a thin scum appeared on the surface. It was afterwards left undisturbed and closely covered in a cool place for two or three days, until fair and large green crystals formed. These were spread abroad in a large flat earthen dish, and exposed to the heat of the sun in the dog-days, being frequently turned, so that the sun might calcine them white. After which, they were "beat grossly," and again exposed to the sun, with due protection from sudden rain: when well calcined, they were reduced to a fine powder, which was for a third time subjected to the sun's rays, with frequent turning and stirring. These operations were continued until the powder was thoroughly white and fine; whereupon it was transferred to a glass vessel, and kept, well corked and sealed, in a dry place.*

The properties which Sir Kenelm claimed for this powder, in a discourse which he delivered before "a solemn assembly of Nobles and Learned Men," at Montpellier, in 1657, were marvellous. If any blood-stained fragment of a wounded person's clothes were dipped in a solution of it, the wound would immediately begin to heal, though the sufferer might be at some place far remote from the scene of operation. Mr. James Howell, the learned author of "*Dendrologia*," and the "*Epistolæ Høelianæ*," was brought forward as a witness. Having unwisely intervened when two of his friends were fighting a duel, by seizing their swords, Howell received some severe cuts in the

covered (and its name invented) by Priestley, in 1774. See Sprengel, iii. 176.

* For life of Digby, see the *Private Memoirs*, edit. by SIR HARRIS NICOLAS, ed. 1827; ANTHONY À WOOD, *Athene Oxonienses*, ed. by Dr. Bliss, 4 vols., 1813-1820.

hands; and after four or five days' treatment with plaisters and bandages, his surgeons feared that gangrene would set in. At Sir Kenelm's request, he gave him a garter which was stained with his blood. Sir Kenelm steeped it in a solution of his sympathetic powder. Howell started with surprise.

"What ails you?" exclaimed Sir Kenelm.

"I know not what ails me," replied Howell; "but I find that I feel no more pain. Methinks that a pleasing kind of freshness, as it were a cold napkin, did spread over my hand, which hath taken away the inflammation that tormented me before."

"Since that you feel already," said his friend, "so good an effect of my medicament, I advise you to cast away all your plaisters. Only keep the wound clean, and in moderate temper 'twixt heat and cold."

Glowing with admiration of his friend and his medicament, Mr. Howell went away, and told his story wherever he could find a listener. Thus it came to the ears of the Duke of Buckingham, who hastened to Sir Kenelm's house to ascertain how far it was true. He dined with Sir Kenelm, who, after dinner, to show the efficacy of his discovery, took the garter out of the solution, and dried it before the fire. Thereupon arrived Mr. Howell's servant to say that his master's hands had turned bad again, and burned as it were betwixt coals of fire. He was dismissed with the assurance that his master would be restored to ease before he reached home. And this was the case, for on the garter being replaced in the solution, Mr. Howell was immediately relieved, and in six days his wounds were entirely healed. The sceptical reader will probably refer the cure to the sensible treatment enjoined by Sir Kenelm—the removal of irritating plaisters and heating badges, and the keeping the wounds clean; but if any less incredulous reader refers it to the Sympathetic Powder, he is welcome to his belief.

The powder had as long a life as most empirical remedies enjoy; but before the death of its inventor, it had ceased to be much used in England. Hartman, Sir Kenelm's confidential servant, seems to think it was an effective astringent lotion in cases of bleeding from the nose; and, he adds, that a certain "Mr. Smith," in "the city of Augusta, in Germany," informed him "that he had a great respect for Sir Kenelm's books, and that he made his sympathetical powder every year, and did all his chiefest cures with it in green wounds, with much greater ease to the patient than if he had used ointments or plaisters."

That on some subjects this graceful and accomplished courtier exhibited an amazing amount of credulity is only too apparent. And the stories he told, and the statements he made, however easily swallowed by himself, proved impossible of digestion to many of his contemporaries. Henry Stubb, the physician, makes no scruple to call him "the Pliny of his age for lying." Lady Fanshawe tells us that she met him once at dinner, at the house of the Governor of Calais, where he briskly led the conversation, and related many of his wonderful anecdotes. "The concluding one," she says, "was that the barnacle, a bird in Jersey, was first a shell-fish to appearance, and from that, sticking upon old wood, became in time a bird. After some consideration, they unanimously burst out in laughter, believing it altogether false." This, however, was "a vulgar error," credited by the great majority of his contemporaries, and by Lady Fanshawe herself, for she adds:—"To say the truth, it was the only thing true that he had discoursed with them;" and compassionately concludes: "That was his infirmity, though otherwise a person of most excellent parts and a very fine-bred gentleman."

We take another of his stories:—A beautiful kiuswoman of his was on the point of becoming a mother. It so happened that in the fashion of wearing black patches on

the face she out-Heroded Herod, and greatly provoked and disgusted Sir Kenelm. In the hope of terrifying her into an abandonment of a disfiguring and senseless custom, he said to her: "Have you no apprehension that your child may be born with half-crowns upon its face, or rather, that all those black patches may assemble in one, and appear in the middle of its forehead?" The rebuke proved satisfactorily effective; but so great was the power of imagination, that the female child to which she gave birth was born with a mark on its brow "as large"—but we presume not of the same colour—"as a crown of gold."

Again. At the house of a French dentist or chemist, the conversation turned upon the dissolvent of gold. Sir Kenelm was immediately ready with illustrations. "One of the royal houses of England," he said, "having stood covered with lead for five or six ages, and being sold after that time, was found to contain three-fourths of silver in the lead." He added, that "a fixed salt, drawn out of a certain potter's earth at Arcueil, in France, being for some time exposed to the sun-beams, became saltpetre, then vitriol, then lead, tin, copper, silver, and at the end of fourteen months, gold; which he affirmed to have experienced himself, as well as another able naturalist."

Anthony Wood tells us that Sir Kenelm used to relate the following story—which, he naively says, put men to very great wonder—namely, "of a city in Barbary, under the King of Tripoli, that was turned into stone in a very few hours by a petrifying vapour that fell upon the place—that is, men, beasts, trees, houses, utensils, etc.; everything remaining in the same posture, as children at their mother's breasts," and so on. This astounding phenomenon he did not invent: it was communicated to him by the Grand Duke of Tuscany's librarian, whose credulity must have been nearly on a par with that of Sir Kenelm himself.

This vivacious, talkative, and ingenious gentleman figures in Lord Clarendon's portrait-gallery, where he makes, on the whole, a favourable impression. "He was a person," says the historian, "very eminent and notorious throughout the whole course of his life, from his cradle to his grave; and inherited a fair and plentiful fortune, notwithstanding the attainder of his father. He was a man of a very extraordinary person and presence, which drew the eyes of all men upon him, which were more fixed by a wonderful graceful behaviour, a flowing courtesy and civility, and such a volubility of language as surprised and delighted; and though in another man it might have appeared to have somewhat of affectation, it was marvellous graceful in him, and seemed natural to his size and mould of his person, to the gravity of his motion, and the tune of his voice and delivery. . . . In a word, he had all the advantages that nature and art, and an excellent education, could give him; which, with a great confidence and presentness of mind, buoyed him up against all those prejudices and disadvantages, as the attainder and execution of his father for a crime of the highest nature; his own marriage with a lady, though of an extraordinary beauty, of as extraordinary a fame; his changing and re-changing his religion; and some personal vices and licences in his life, which would have suppressed and sunk any other man, but never clouded and eclipsed him from appearing in the best places and the best company, and with the best estimation and satisfaction."

Kenelm Digby was born on the 11th of June (or July), 1603. His father was the ill-fated Sir Everard Digby, who, for his complicity in the Gunpowder Plot, suffered on the scaffold when his son was about three years old. By Sir Everard's attainder the family inheritance was greatly reduced, but a portion of the estates was entailed, so that Kenelm succeeded to an income of £3000 per annum. In his fifteenth

year he entered Gloucester Hall (now Worcester College), Oxford; and when he was eighteen, he set out on the course of Continental travel then considered an indispensable part of the education of a young man of family, accompanied by Mr. (afterwards Sir) Aston Cokayne. He was at Madrid in 1623, when Prince Charles and the Duke of Buckingham paid their romantic visit to the Spanish capital. To this accident he probably owed the honour of knighthood, which James conferred upon him at Hinchinbroke in the October following. That he had ingratiated himself to good purpose with the Prince and his favourite is evident from the appointments which he afterwards held—Gentleman of the Bedchamber, Commissioner of the Navy, and Governor of the Trinity House. In December, 1627, he received a naval command, and off Scanderoon attacked and defeated a combined fleet of Venetians and Frenchmen, greatly superior to his own in force. He set a brilliant example to his followers by laying his ship alongside the big flag-ship of the enemy and fighting at close quarters. "He encountered their whole fleet," says Lord Clarendon, "killed many of their men, and sank one of their galleasses; which, in that drowsy and inactive time, was looked upon with a general estimation, though the Crown disavowed it." Ben Jonson has celebrated the exploit of this splendid young warrior in his sonorous verse:—

"Though, happy Muse, thou know my Digby well,
Yct read in him these lines: he doth excel
In honour, courtesy, and all the parts
Court can call hero, or man could call his arts.
He's prudent, valiant, just, and temperate;
In him all virtue is beheld in state;
And he is built like some imperial room
For that to dwell in, and be still at home.
His breast is a brave palace, a broad street,
Where all heroic, ample thoughts do meet;

Where nature such a large survey hath ta'en,
As other souls, to his, dwelt in a lane :
Witness his action done at Scanderoon
Upon his birthday, the eleventh of June."

His marriage with the beautiful and frail Venetia Stanley has lent a peculiar and semi-romantic interest to his life. She was a lady of the best blood in England—a Stanley was her father, and a Percy her mother; her charms of person were pre-eminent; she was singularly accomplished, and gifted with that strange power of fascination which is something distinct from wit and beauty, though wit and beauty do not fail to heighten it. In their childhood they had been close friends, and even more; for Sir Kenelm, in his "*Loose Fantasies*"—a kind of lover's autobiography—affirms that "the first time that ever they had sight of one another they grew so fond of each other's company that all who saw them said assuredly that something above their tender capacity breathed this sweet affection into their hearts. They would mingle serious kisses among their innocent sports; and whereas other children of like age did delight in play and light toys, these two would spend the day in looking upon each other's face, and in accompanying these looks with gentle sighs, which seemed to portend that much sorrow was laid up for their more understanding years; and if at any time they happened to use such recreations as were suitable to their age, they demeaned themselves therein so prettily and so affectionately that one would have said love was grown a child again, and took delight to play with them."

It is probable, however, that this passage is no more true than the rest of the "*Loose Fantasies*," which seems to us as complete a fiction as any of the wonderful relations with which Sir Kenelm loved to embroider his after-dinner converse. At all events, it is clear that he has raised an airy fabric of romance upon a very slight foundation of truth. While

Kenelm was on his travels, Venetia emerged from her rural seclusion, and appeared in the fashionable circles of London. Her loveliness soon attracted admirers, and as her temper was amorous, and her virtue easy, her name was speedily associated with stories of shame and dishonour. Sir Kenelm returned to find her the discarded mistress of the Earl of Dorset, who had settled on her an annuity of £500 per annum. He pressed his suit, notwithstanding the cloud that hung upon her fame, fascinated by the personal graces which warmed old Aubrey into a strain of unusual fervour. Bewitching, indeed, the young beauty must have been, if the portrait drawn of her by the quaint old gossipy author of the "Miscellanies" be not flattered.

"She had," he says, "a most lovely, sweet-tuned face, and delicate dark-brown hair. She had a perfect, healthy constitution; strong; good skin; well proportioned, inclining to *bona roba*. Her face, a short oval; dark-brown eye-brow, about which much sweetness, as also in the opening of her eyelids. The colour of her cheeks was just that of the damask rose, which is neither too hot nor too pale. She was of a just stature, not very tall."

Ben Jonson does not "condescend to particulars," but expresses the supreme charm of her loveliness with all a poet's imaginative glow :

"Draw first a cloud, all save her neck,
And, out of that, make day to break;
Till like her face it do appear,
And men may think all light rose there.

"Then let the beams of that disperse
The cloud, and show the universe;
But at such distance, as the eye
May rather yet adore, than spy.

"The heaven designed, draw next a spring,
With all that youth, or it can bring:
Four rivers branching forth like seas,
And Paradise confining these.

“Last, draw the circles of this globe,
And let them be a starry robe
Of constellations 'bout her hurl'd;
And thou hast painted Beauty's world.”

The marriage took place early in 1625, and thenceforward the beauty's conduct seems to have been without flaw. Her husband, however, was continually tormented by a violent jealousy, while to his wife his uxorious admiration of her personal attractions must have been almost as harassing. He caused her portrait to be taken in all kinds of attitudes, much as if she had been a “professional beauty” of the present day; busts of her were sculptured in brass and copper gilt; her face, her hands, her feet were moulded in plaster. If tradition may be credited, he invented or adopted the strangest cosmetics to improve and preserve her complexion; and for the same purpose dieted her with the flesh of capons which had been fed upon vipers, and administered a medicine compounded of snails—the *helix pomatia*, which he imported from abroad, and introduced into the woods on his estate of Gothurst. In short, his was not the manly, trustful, self-respecting love of a husband for a wife, but the mad fondness of an idolator for his gilded image. It is said, and probably with some degree of truth, that the use of these strange drugs and medicaments hastened her death, which took place at the age of thirty-two, on the 1st of May, 1633. She was found dead in her bed, lying in an attitude of sleep, with her head supported on her hand.

Sir Kenelm mourned his beautiful wife with sincerity, but with that exaggeration and eccentricity which were natural to his character. Retiring to Gresham College, he applied himself with much assiduity to the study of chemistry. That all the world might learn the depth of his sorrow, he allowed his beard to grow, and was never seen in the haunts of men except with a long mourning cloak and a high-crowned hat. The out-

break of the Civil War, however, drew him from his retreat, and he threw himself into the royal cause with all the ardour of his temper. His loyalty brought down upon him the vengeance of the Puritan party, and he was imprisoned for several months in Winchester House. In 1643 he obtained his release, on condition that he gave his word, as a Christian gentleman, to take no part, openly or covertly, against the Parliament, and that he quitted England. In Paris his personal gifts, his accomplishments, and his eccentricities made him the observed of all observers—a distinction which, we may be sure, was not unwelcome to him. He had embraced the Roman Catholic religion some years before, and Queen Henrietta Maria selected him, therefore, to go on a secret mission to the Pope in 1648. But at Rome he behaved with so much indiscretion that the Pope declared he was mad. “He grew high,” says Anthony Wood, “and huffed his Holiness;” it is said that he even presumed, on one occasion, to contradict him flatly.

On the establishment of the Commonwealth Sir Kenelm contrived to make his peace with Cromwell, and returned to England. He became a frequent guest at Whitehall, and the Protector appeared to enjoy his society and appreciate his conversation. The state of his health induced him, in 1656, to visit the south of France, and during 1658 and 1659 he wandered about Lower Germany. At the Restoration, he finally returned to England, and devoted his remaining years to the study of philosophy, mathematics, and his favourite chemistry. At the formation of the Royal Society he was elected one of the Council, and he attended with great regularity the Society’s meetings. His death took place on the 11th of June, 1665, when he was in his sixty-second year; and he was buried by his wife’s side in Christ Church, near Newgate. His tomb bears the following inscription:—

“Under this tomb the matchless Digby lies—
Digby the great, the valiant, and the wise—

This age's wonder for his noble parts,
Skilled in six tongues and learned in all the arts.
Born on the day he died—the Eleventh of June,
And that day bravely fought at Scanderoon.
It's rare that one and the same day should be
His day of birth and death and victory."

With all his "noble parts" and knowledge of "the arts" and "tongues," Sir Kenelm accomplished nothing worthy. His treatises on "The Nature of Bodies," and "Of Man's Soul," are forgotten; and he is remembered chiefly by the eccentricities of a wayward career, his fair wife, and his "sympathetic powder." He seems to have wanted that solidity of character, that singleness of purpose, and that coolness of judgment, which are essential to the proper development and full activity of the most brilliant gifts—without which those gifts are as surely wasted as the waters which no guiding power directs into definite and well-considered channels.

In 1669 was published a curious memorial of this accomplished knight. It is entitled, "The Closet of the Eminently Learned Sir Kenelm Digbie, Kt., Opened: whereby is discovered Several Ways for Making of Metheglin, Sider, Cherry-Wine, etc.; together with Excellent Directions for Cookery: as also for Preserving, Conserving, Candyng, &c."

THOMAS SYDENHAM, 1624-1689.

During the latter half of the seventeenth century the science of Medicine made a large and swift advance. The chemical theory, originated by Paracelsus, and confirmed by Van Helmont, had begun to decline, though it still attracted some eminent supporters. Among them was Sylvius, a Dutch physician, who, however, modified it to a considerable extent, and became the founder of what is known as the *Chemiatic School*. His leading principle was that a perpetual fermentation takes

place in the human body, and that diseases are a result of its deranged action; most of them originating in excess of acidity, though a few proceed from alkaline causes. Sprengel, who criticizes his teaching with much severity, affirms that he degraded the physician to the level of a distiller or a brewer. What is worthy of notice is, that he strongly advocated the use of tea and tobacco—two commodities, by the way, in the sale of which his patients were largely interested. In England the principal adherent of the Chemiatic School was Dr. Wallis, of Oxford, whose fame, however, is really due to his researches in anatomy. Portal describes him as one of the greatest geniuses that ever lived; and it may be conceded that among physiologists he still holds an honourable position. His “Anatomy of the Brain,” in which he was much assisted by his friend Lower, is “a masterpiece of imagination and labour.” In the structure of that organ his discoveries were important, and he traced the nerves radiating from it with a clearness and an accuracy which none of his predecessors had approached.

Meanwhile, another school of Medicine, called the *Iatro-mathematical*, was started in Italy. Its members endeavoured to explain everything by statical and hydraulic laws; and studied anatomy, therefore, because an accurate knowledge of all the parts of the body was necessary to enable them to apply their mathematical standards. John Bernoulli pushed the theory so far as to employ the differential calculus in explanation of physical functions. But this school, like the Chemiatic, forgot that the peculiarity of the laws of life and organization often render those of inert matter inapplicable. Pitcairn and Boerhaave were leaders of the iatro-mathematicians; Mead was the last of their distinguished supporters.

The future of medicine, however, lay in the hands of a third school, which we shall designate the *Experimental*,* because

* The term “Empirical,” sometimes used, is open to obvious misunderstanding.

its disciples carefully studied the results of observation and experience—the two main principles of the Baconian or inductive philosophy. Sydenham was its founder and prophet in England; and the direction which he gave to the English practice of Medicine it has ever since followed, to the almost total disuse or exclusion of systematic theory. The success of the Experimental school at its outset was materially helped by the discovery of several new drugs, and especially of the Peruvian bark (or quinine), first employed in Spain about 1640, and in England about 1654, because the efficacy of some of these could not be accounted for upon any known hypotheses.

THOMAS SYDENHAM, who came of an old Somersetshire family, one branch of which had wandered into the adjoining county, was born at Winford Eagle, in Dorsetshire, in 1624. At the age of eighteen he was entered a Commoner of Magdalen Hall, Oxford; but his studies were broken up by the outbreak of the Civil War, and, like most of the Oxford students, he at once chose his side in the great national contention. He fought under the flag of the Parliament, and in the Puritan army rose to the rank of captain. A curious anecdote is told of him at this period.

Being in his lodgings in London, and going to bed one night “with his clothes loosed,” a soldier mad with drink, who resided in the same house, forced his way into his chamber, and with one hand gripping him by the breast of his shirt, discharged with the other a loaded pistol into his bosom, but strange to say, without inflicting any hurt, the bullet deflecting in a different direction. Soon after this event Sydenham resigned his commission in the army in order to resume his studies at Oxford, which had fallen into the hands of the Parliament. On his way thither he made the acquaintance “of the learned and ingenuous Master Thomas Coxe, Doctor,” who had at one time attended his brother. Dr.

Coxe naturally asked the young man what profession he intended to adopt, and learning that he had not made up his mind, strongly recommended him to take up that of Medicine. The encouragement of so high an authority decided Sydenham in this course; "and hence," he says, "all the little merit that my works may have earned in the eyes of the public is to be thankfully referred to him who was the patron and promoter of my first endeavours."

He returned to Magdalen Hall, but was almost immediately elected a Fellow of All Souls' in place of a Royalist, who had been expelled. In April, 1648, he took his degree of Bachelor of Physic, and soon afterwards began to experience the violent attacks of gout and stone which harassed him for the remainder of his life.

These facts dispose of Sir Richard Blackmore's assertions that Sydenham "was made a physician by accident and necessity, without any preparatory discipline or previous knowledge, and that he never deigned to take it up as a profession till the Civil Wars were composed, when, being a disbanded officer, he entered upon it for a maintenance." Blackmore goes on to tell the following story:—"When one day I asked Sydenham to advise me what books I should read to qualify me for practice: 'Read Don Quixote,' replied he, 'it is a very good book. I read it still.' 'So low an opinion,' he adds, 'had this celebrated man of the learning collected out of the authors, his predecessors.'" And so low an opinion had he formed, we may conjecture, of the abilities of his questioner! But those who know the follies and extravagances of "the authors, his predecessors," will not be surprised if Sydenham failed to value them highly. In one of his dedications he remarks that his book is not stuffed out "with the spoils of former authors." . . . "I have no wish," he says, "to disturb their ashes." He had no faith in authority, recognized no infallibility in the systems of ingenious theorists, put his whole trust in observa-

tion and experience. Writing to his friend, Dr. John Maplet, he says: "The more I observed the facts of this science with an attentive eye, and the more I studied them with due and proper diligence, the more I became confirmed in the opinion which I have held up to the present hour, namely, that the Art of Medicine was to be learned only from its practice and its exercise; and that, in all probability, he would be the best skilled in the detection of the true and genuine indications of treatment who had the most diligently and the most accurately attended to the natural phenomena of disease." And he refers to the illustrious Locke as agreeing with him in this view.

Sydenham settled in London about 1660. In 1663 he became a Licentiate of the College of Physicians, but could not proceed further as he had not taken a doctor's degree. Notwithstanding his great abilities, and his friendship with some of the most eminent men of his age, he never attained to any conspicuous popularity or professional ascendancy, though he certainly enjoyed a considerable practice. The side he had taken in the Civil War might account for his disfavour with the Court; with the public, the want of pretension and quackery in his mode of treatment would operate possibly as a disadvantage. He was, perhaps, the first great physician who trusted largely to Nature's curative powers. He made no attempt to anticipate the operations or usurp the functions of Nature, but confined himself to the more modest and the safer task of removing impediments to her free and spontaneous action. In one of Dr. John Brown's agreeable essays occurs a passage which we have sometimes thought is specially applicable to Thomas Sydenham. He says that the prime qualifications of a physician may be summed up in the words, *Capax, Perspicax, Sagax, Efficax*. "*Capax*—there must be room to receive, and arrange, and keep knowledge; *Perspicax*—senses and perceptions keen, accurate, and immediate, to

bring in materials from all sensible things; *Sagax*—a central power of knowing what is what, and what it is worth, of choosing and rejecting, of judging; and finally, *Efficax*—the will and the way—the power to turn all the other three—capacity, perspicacity, sagacity—to account, in the performance of the thing in hand, and thus rendering back to the outer world, in a new and useful form, what you had received from it.” In the full sense of Dr. Brown’s use of the words, Sydenham was undoubtedly *capax*, *perspicax*, *sagax*, *efficax*. Tradition says that in his earlier professional life it was his wont, when consulted by a patient for the first time, to listen attentively to his statements, and then to say: “Well, I will consider of your case, and in a day or two will order something for you.” But he found that this careful deliberation was unsatisfactory to his patients, and that many of them forgot to come again. Accordingly, he was obliged to adopt the usual custom and prescribe immediately for the ailments, however obscure or complex, of those who resorted to him for advice. Yet, except in extreme necessity or in trivial cases, Sydenham’s original custom would seem to have had sound sense at the bottom of it, for it afforded him time to reflect with due care on the character and conditions of the malady brought under his notice, and the best means of combatting it successfully. The rapidity with which some doctors “diagnose” a case, prescribe a remedy, and—pocket their fees, savours a good deal more of the methods of quackery than of those of science.

It was in 1666 that Sydenham “inaugurated” a momentous revolution in Medicine by the publication of his “*Methodus Curandi Febres*” (Method of Curing Fevers), which he dedicated to Robert Boyle, a man in every way worthy of the dedication of such a work. There was a special fitness in its endorsement with his name, as it was written on his persuasion and recommendation.

In his preface the physician shows his lofty sense of the dignity of his profession, and of the responsibilities it entails. "Whoever takes up Medicine," he says, "should seriously consider the following points : firstly, that he must one day render to the Supreme Judge an account of the lives of those sick men who have been intrusted to his care; secondly, that such skill and science as, by the blessing of God, he has attained, are to be specially directed towards the honour of his Maker, and the welfare of his fellow-creatures, since it is a base thing for the great gifts of Heaven to become the servants of avarice or ambition; thirdly, he must remember that it is no mean, ignoble animal that he deals with. We may ascertain the worth of the human race, since for its sake God's only-begotten Son became man, and thereby ennobled the nature that He took upon Him. Lastly, he must remember that he himself hath no exemption from the common lot, but that he is bound by the same laws of mortality, and liable to the same ailments and afflictions with his fellows. For these and like reasons let him strive to render aid to the distressed with the greater care, with the kindlier spirit, and with the stronger fellow-feeling."

The leading principle which governs his teaching is, that disease is a vigorous natural effort to restore the health of the sufferer by the expulsion of the morbid matter, and that it should be the physician's object to assist Nature while she performs this process. Thus he is led to foreshadow the modern sanitary treatment. Instead of shutting up the patient in a close room, where the air grows unwholesome, and all the surroundings are depressing, he would introduce light, and freshness, and freedom. "I see no reason," he says, "why the patient should be kept stifled in bed, but rather that he may rise and sit up a few hours every day, provided the injuries arising from the extremes of heat and cold be prevented, both with respect to the place wherein he is, and his manner of

clothing." Sydenham's rivals contended that the whole of his treatment consisted in *doing nothing*—might be summed up in the words, *nihil agendum*. It would be more correct to say that he advocated *doing little*; or, in other words, he insisted that no obstacles should be thrown in the way of Nature's endcavour to cure herself. His method was tentative and expectant. "My chief care in the midst of so much darkness and ignorance is," he says, "to wait a little, and proceed very slowly, especially in the use of powerful remedies, in the meantime observing its nature and procedure, and by what means the patient was relieved or injured." Amongst the powerful remedies to which he refers is Peruvian bark, the use of which he emphatically recommends. He perceives the importance of humouring, in at least a moderate degree, the inclinations of his patient. "A person in a burning fever," he says, "desires to drink freely of some small liquor; but the rules of art, built upon some hypothesis, having a different design in view, thwart the desire, and instead thereof order a cordial. In the meantime the patient, not being suffered to drink what he wishes, nauseates all kinds of food, but art commands him to eat. Another, after a long illness, begs hard, it may be, for something odd or questionable; here, again, impertinent art thwarts him and threatens him with death. How much more excellent the aphorism of Hippocrates: 'Such food as is most grateful, though not as wholesome, is to be preferred to that which is better, but more distasteful.'"

In 1668 appeared a second edition of his "Method," with a chapter on the Great Plague of 1665, in which he observes that some persons might condemn him as rash and arrogant for pretending to write upon it, as, when the plague was raging most violently, he was several miles distant from the city, and therefore might be supposed to be inadequately provided with observations; but perceiving that the more

skilful physicians who had bravely ventured to remain during so dangerous a time had not written upon the subject, he hoped that all good men would pardon him for publishing his opinion upon that dreadful national calamity. It seems that he did not leave London until the middle of June, 1665, when the pestilence was so deadly that in seven days it killed as many thousands. Then, being endangered by its rapid approach to his own house, he yielded to the persuasions of his friends, and removed with his family some miles from the afflicted city.

He returned to his post, however, before the plague had spent its force, "though it could not be," he says, with characteristic modesty, "but by reason of scarcity of better physicians, I should be called in to the assistance of those who had the disease." His mode of treatment was to bleed freely; and he asserts that when this was done before any tumour appeared, the patient invariably recovered. He quotes a remarkable case:—

"I will give," he says, "an instance of an injury I once did, but without guilt, not because I let blood, but because I was not allowed to take away as much as was necessary. Being sent for to a young man of a sanguine complexion, and strong constitution, who had been seized with a violent fever two days before, with giddy pains of the head, violent vomitings, and such-like symptoms, and finding, upon inquiry, that he had no sign of a swelling, I immediately ordered that a large quantity of blood should be taken away, which had the appearance of blood drawn in a pleurisy, and I prescribed also a ptisan, with cooling juleps and broths. In the afternoon he was bled again, and on the following morning lost the same quantity. Towards the evening of this day I visited my patient, and found him much better; but his friends, notwithstanding this improvement, were violently opposed to further bleeding. But I earnestly contended that it should

be repeated again, saying, that he needed only undergo the operation once more, and he would be safe; on the contrary, if they continued obstinate, it would have been better that no blood had been taken away at all, and that the cure had been attempted by perspiration; in short, I predicted that the patient would thus die. The event confirmed the prognosis, and while we were disputing the matter, the purple spots broke out, and he died in a few hours."

Sydenham concludes his chapter on the plague with a passage which admirably illustrates the fine temper he brought to the discharge of his professional duties. In the character of this prince of physicians we are particularly struck with his profound conscientiousness, his humility, his freedom from prejudice and jealousy, and, above all, with his strong sense of the dignity and sacredness of his art. And the words we are about to quote bring forward these high qualities. "If the reader shall find," he says, "that I have anywhere erred in theory, I beg his pardon; but, as to practice, I declare that I have faithfully related everything, and that I never proposed any plan of cure before I had thoroughly tried it. Indeed, when I come to die, I trust I shall have a cheerful witness in my breast, that I have not only, with the greatest diligence and honesty, attempted the recovery of the health of all who committed themselves to my care, of what condition soever they have been (of whom none was otherwise treated by me than I desire to be, if I myself should happen to suffer the same diseases), but that also I have laboured to the utmost of my power, if by any means it might be, that the cure of diseases may be managed after I am dead with greater certainty, for I esteem any progress in that kind of knowledge (how small soever it be), though it teach no more than the cure of the toothache, or of corns upon the feet, to be of more value than the vain pomp of nice speculations."

The last of his works published during his life-time was

his "Treatise on the Gout," which has always been highly esteemed for its graphic description of that form of physical torture. In his dedication to Dr. Short, he records the fact that, while composing it, he suffered so much from the malady as to be unable to hold a pen, and was compelled to employ an amanuensis. With the humour which is observable as an undercurrent in all his writings, he describes how the victim of "podagra dire" goes to bed and sleeps well until about two o'clock in the morning, when he awakes with a pain in his great toe, heel, calf, or ankle; slight at first, it gradually increases, and resembles that of dislocated bones: towards the following night it reaches its climax, accommodates itself subtly to the various forms of the instep, the ligaments of which it seizes, like the gnawing of a dog, and at length becomes so exquisite that the affected part is unable to endure the weight of the clothes upon it, nor will the patient permit any person to walk hastily across the chamber. The severity of this first attack continues for twenty-four hours, when the sufferer enjoys a little ease, begins to perspire, falls asleep, and on awaking finds the pain much abated, but the part swollen. The next day, and, perhaps, for the two or three following days, towards evening, the torture returns, but remits towards the time of cock-crow. In a few days the other foot is destined to endure the same excruciating agony.

Sydenham himself had wrestled with this fell disease from the early age of twenty-two. In 1660 the attack had been very violent and long-continued, and then, for the first time, he began to feel the approaches of a scarcely less painful malady, the gravel. In 1676, after heavy and protracted exercise, he suffered another severe paroxysm, and the symptoms which alarmed him returned as often as he rode in a coach along the paved streets, however slow and gentle was the motion.

His physical condition compelled him to regulate his

dietary with care, as he himself informs us. "In the morning, when I rise, I drink a dish or two of tea, and then ride in my coach till noon. When I return home, I moderately refresh myself with any sort of meat, easy of digestion, which I like (for moderation is necessary above all things): I drink a little more than a quarter of a pint of Canary wine, daily, immediately after dinner, to promote the digestion of the food in my stomach, and to drive the gout from my bowels. When I have dined, I betake myself again to my coach, and, when business will permit, I ride into the country two or three miles for good air. A draught of small beer serves me instead of supper, and I take another draught when I am in bed, and about to compose myself to sleep."

Sydenham concludes his treatise with the observation that he has now given to the world the sum of all the knowledge he has acquired respecting the cure of diseases, up to the day on which he wrote it, namely, the 29th of September, 1686.

After a life devoted to the service of his fellow-men, this great physician, whom Boerhaave so justly described as "*Anglicæ lumen, artis Phœbum, verum Hippocratici viri speciem*," died of debility, induced by disease and unremitting labour, at his house in Pall Mall, on the 29th of December, 1689. He was buried in St. James's, Westminster, where in 1809 the College of Physicians placed a tablet to his memory, with the following felicitous inscription:

"Prope hunc Locum sepultus est
THOMAS SYDENHAM,
Medicus in omne ævum nobilis.
Natus erat A.D. 1624,
Vixit Annos 65.
Deletis veteris Sepulchri Vestigiis
Ne Rei Memoria interiret
Hoc Marmor poni jussit Collegium
Regale Medicorum Londinense, A.D. 1810,
Optimo Merito."

After his death was published his "Processus Integri" (written in Latin), which affords us a comprehensive result of his wide and long experience. Its elegant Ciceronian Latinity is warmly praised by Dr. Johnson. The Cambridge University Library contains, in manuscript, a fragment entitled "Theologia Rationalis," which has a profound interest from the indications it affords of his religious belief. He would seem to have belonged to what has been called the Cambridge School of Rational Theologians, and to have advocated to the fullest extent the supremacy of reason in matters affecting the soul's future life and its relations to its Divine Father.

JOHN RADCLIFFE, 1650-1714.

At the death of Sydenham, Dr. John Radcliffe was thirty-nine years old, and had already attained a professional position second only to that of the elder physician. Thenceforward he occupied the foremost place, until, in his turn, he rested from his labours, and a successor was found to him in Dr. Richard Mead. A man of strong sense, of solid judgment, and shrewd wit, he yielded at times to a boisterousness of humour and a roughness of manner which partially obscured his good qualities, and injured his reputation with posterity. Hence we find this skilful practitioner and kindly-natured gentleman spoken of by a popular writer as "the physician without learning and the luxurious *bon vivant*, who grudged the odd sixpences of his tavern scores"—a description which conveys a radically erroneous impression. We turn with pleasure to the fairer estimate of a more judicious authority, who, "giving him every credit for the strong good sense and natural sagacity with which he was really endowed," adds that "his munificent acts of bounty, his almost unexampled liberality, point him out as one of the most celebrated of a profession that has always been distinguished for its liberality, and fully explain to us the esteem in which he was held by his contem-

poraries, to whom, in spite of his infirmities of temper, the generosity of his disposition, and the sprightliness of his conversation, rendered him at all times a most agreeable companion."

John Radcliffe, the son of a Yorkshire gentleman of moderate estate, was born at Wakefield, in 1650, and educated at the grammar-school of that ancient borough. At the age of fifteen, he was entered a member of University College, and he was only nineteen when he took his degree of B.A. and was made senior scholar. As there was no fellowship vacant at University, he removed to Lincoln, of which he had previously been invited to become a Fellow. He then undertook with a good deal of assiduity the study of physic, and attended the different courses of anatomy, chemistry, and botany. In 1672 he took his degree of M.A. with exceptional credit. As to his academical career, it is said that he cared little for the logic on which Oxford professors expended so much valuable labour, but cultivated general literature with strenuous application. In all things a worshipper of common sense, he threw aside the folios of antiquity, full of exploded theories and fantastical conjectures, and devoted himself to a careful investigation of the more valuable works that had appeared in his own times—works embodying the results of observation and experiment. It was characteristic of the man that when Dr. Bathurst, the Master of Trinity College, and the collaborator of Harvey in his experiments upon the incubation of eggs, asked him, during a visit to his rooms, where was his library, Radcliffe, in reply, pointed to a corner in which lay a few vials, a skeleton, and a herbal.

In 1675, having graduated Bachelor of Medicine, he entered upon professional practice in Oxford. His success was immediate, though he was strongly opposed and vehemently decried by the leading Oxford apothecaries, Adams and Foulkes, whose commercial instincts revolted against a

mode of treatment which took small account of drugs. They complained that it was contrary to that of Dr. Lydal, then the most celebrated practitioner in the University. But Radcliffe's superiority so soon became manifest that the apothecaries were compelled to give way, and make interest with him "to have his prescriptions on their files."

Radcliffe's system was founded upon Sydenham's, and his method of treating the small-pox was the cooling treatment—a method suggested by common sense, and sanctioned by experience. In his treatise on this disease, Sydenham insists upon the salutary influence of cold in its worst and most aggravated forms, which were sometimes induced by the pernicious heating and stimulating treatment formerly popular. Fortunately, he observes, it not infrequently happens that from the preposterous application of heat externally and cordials internally, the patient becomes delirious, and in a fit of frenzy, escaping from the cruel attentions of the nurse, leaps out of bed, lies exposed for many hours to the cool night air, and, as if by magic, recovers. And he goes on to relate the case of a person, known to himself, who in his youth had gone to Bristol, been seized with the small-pox, and stimulated into a delirium. His nurse, having some business to transact in the town, left her patient to the care of others. During her absence, he died—at least, in the belief of those about him—and as the weather was very hot, they, to prevent the emission of bad odours from the body, lifted it from the bed, and placed it, with no other covering than a sheet, upon a table. The nurse, on her return, proceeds, sorrowfully enough, to the chamber of death; but, on removing the sheet, and looking at the victim's countenance, thinks she can discover some faint symptoms of life—causes him to be replaced in the bed, administers restoratives, and, in a few days, has the satisfaction of seeing her patient sane and sound.

Sydenham's "new method," as it was called, made very few converts in his own generation, but one of these was Radcliffe, whose clear, practical judgment recognized its value, and whose original mind was unprejudiced by the influences of tradition. He applied it with such success during a visitation of small-pox of the most fatal character in Oxford—allowing free access of fresh, pure air to the sick, administering cooling emulsions, and employing other antiphlogistic remedies—that he cured upwards of one hundred cases.

About this time he was called in to attend upon Lady Spencer, who had long been in the hands of Dr. Lydal and Mr. Musgrave, without deriving any benefit from their prescriptions. His skilful advice was rapidly attended with favourable results; in a few weeks the invalid was restored to health, and she lived many years afterwards. The fame of this remarkable cure spread far and wide, and Radcliffe soon counted among his patrons the noble houses of Northampton, Sunderland, Carnarvon, and Abingdon. Before he had been two years in practice, his visiting list included the best families in and around Oxford for many miles.

A disagreement arising between him and Dr. Marshall, the Rector of Lincoln College, he resigned his Fellowship in 1677; but continued to reside in the University, and did not remove to London until 1684, two years after taking his M.D. degree. He hired a house in Bow Street, Covent Garden, next door to Sir Godfrey Kneller's. Artist and physician were for a while great friends, and, at length, that the latter might obtain easy access to the former's beautiful gardens, a door was opened in the boundary wall. An unlucky proceeding; for the doctor's servants made use of it also, and injured the flower beds and shrubberies in which Sir Godfrey delighted. He remonstrated strongly against their misconduct, but, obtaining no redress, sent word that, if the depredations continued, he would brick up the entrance.

"Tell Sir Godfrey," said the hasty physician, "that he may do what he likes to the door except paint it." Kneller retorted, with much good humour: "Go back and tell Dr. Radcliffe that I'll take anything from him but physic!"

The physician's quip quarrelsome and the painter's retort courteous were versified by an anonymous rhymester:—

"Sir Godfrey and Radcliffe had one common way
Into one common garden, and each had a key.
Quoth Kneller—'I'll certainly stop up that door,
If ever I find it unlocked any more!'
'Your threats,' replies Radcliffe, 'disturb not my ease,
And so you don't paint it, e'en do what you please.'
'You're smart,' rejoins Kneller, 'but say what you will,
I'll take anything from you—but potion or pill.'"

He had been established in London scarcely a twelve-month, before the vigour of his abilities placed him at the head of his profession. And this in the face of determined opposition, for his rivals were many and influential. Among them was Dr. Gibbons, the pet of the apothecaries, with whom he sided in the famous Dispensary quarrel immortalized in Garth's poem: he was one of the old school; a believer in slops, and stimulants, and mighty potions—"Nurse" Gibbons, as Radcliffe's caustic tongue intitled him. There were Sir Richard Blackmore, most ponderous of verse-makers; Sir Edmund King, a fashionable practitioner; Dr. Whistler; and Sir Edmund Hannes, probably his one formidable opponent. Hannes was greatly his inferior in capacity and knowledge, but he understood the art of advertising, and neglected no opportunity of keeping himself *en évidence* with the public. He drove about town in a carriage with four horses, and these horses of admirable breed and appearance. "By Jove! Radcliffe," said a *gobemouche*, "Hannes's horses are the finest I have ever seen!" "Are they so?" muttered Radcliffe; "then they'll sell for all the more."

At Garraway's, at Button's, and other coffee-houses, it was

then the custom for the London doctors to meet for professional chit-chat; and it was one of Hannes's small stratagems to send his servant to these well-attended *réunions* to inquire, with a good deal of *impressement*, for his master. One day, he thrust his head into Garraway's. "Gentleman, can your honours tell me if Dr. Hannes is here?" "Who wants Dr. Hannes, fellow?" growled Radcliffe, who had his own table at Garraway's, and attended daily. "Lord A—— and Lord B——, your honour." "Nay, friend," said the doctor, with grim irony, "you are wrong. Those lords don't want your master; 'tis he who wants them."

When the hapless boy-prince, the young Duke of Gloucester, was seized with his last illness in 1700, Sir Edmund Hannes and Sir Richard Blackmore were called in to attend him. But when their advice and prescriptions had effected no improvement in his condition, Radcliffe was summoned. He quickly satisfied himself that the case had been mismanaged, and a fatal character imposed upon an ordinary malady. After reproaching them, justly enough, for their want of skill, he exclaimed: "It would have been happy for this nation had you, sir [*to Hannes*], been bred up a basket-maker; and you, sir [*to Blackmore*], had remained a country schoolmaster, rather than have ventured out of your reach in the practice of an art to which you are a perfect stranger, and for your blunders, in which you ought to be whipped with one of your own rods." Sir Richard, we may explain, had at one time served as an usher; and Hannes's father was a basket-maker.

In 1686, Radcliffe was appointed physician to the Princess Anne. About the same time, he was exposed to urgent solicitations from the Court Chaplains to embrace the faith of the Roman Catholic Church. He sturdily resisted their arguments, promises, and entreaties; and to Mr. Obadiah Walker, of University College, Oxford, who had written to

him that "he should be incessant in his prayers to the great God above, and to the blessed Virgin, that he might be enlightened, and see the things that belonged to the peace of his immortal soul," he replied in the following manly strain :—

"BOW STREET, COVENT GARDEN, *May* 25, 1688.

"SIR,—I should be in as unhappy a condition in this life, as you fear I shall be in the next, were I to be treated as a turn-coat ; and must tell you that I can be serious no longer, while you endeavour to make me believe what, I am apt to think, you give no credit to yourself. Fathers, and councils, and antique authorities, may have their influence in their proper places : but should any of them all, though covered with dust fourteen hundred years ago, tell me, that the bottle I am now drinking with some of your acquaintance is a wheelbarrow, and the glass in my hand a salamander, I should ask leave to dissent from them all.

"You mistake my temper in being of an opinion that I am otherwise biassed than the generality of mankind are. I had one of your new convert's poems in my hands just now : you will know them to be Mr. Dryden's, and on what account they were first written, at first sight. Four of the best lines, and most apropos, run thus :—*

"By education must have been misled,
So they believe, because they were so bred ;
The priest continues what the nurse began,
And thus the child imposes on the man !"

"You may be given to understand from hence that, having been bred up a Protestant at Wakefield, and sent from thence in that persuasion to Oxford, where, during my continuance, I had no relish for absurdities, I intend not to change principles, and turn Papist, in London.

* They occur in *The Hind and the Panther*.

"The advantages you propose to me may be very great, for all that I know. God Almighty can do very much, and so can the King, but you'll pardon me if I cease to speak like a physician for once, and with an air of gravity am very apprehensive that I may anger the one, in being too complaisant to the other. You cannot call this pinning my faith to any man's sleeve; those that know me are too well apprised of a quite contrary tendency. As I never flattered a man myself, so 'tis my firm resolution never to be wheedled out of my real sentiments; which are, that since it has been my good fortune to be educated according to the usage of the Church of England, established by law, I shall never make myself so unhappy as to shame my teachers and instructors by departing from what I have imbibed from them.

"Yet though I shall never be brought over to confide in your doctrines, no one breathing can have a greater esteem for your conversation, by letter or word of mouth, than, Sir,

"Your most affectionate

"And faithful servant,

"JOHN RADCLIFFE."

The out-spokenness which characterizes this letter, and, indeed, all our physician's utterances, was the cause of the withdrawal of the favour with which the Princess Anne had regarded him. Soon after the death of Queen Mary, the Princess, by irregularity of diet, had brought on a slight nervous attack, and thinking herself much worse than she really was, had dispatched a hasty summons to her physician. Radcliffe was enjoying his ease at a tavern, and not believing in his royal patron's malady, continued still to gossip with his friends over the walnuts and the wine. A second message found him excited by his liberal potations, and he absolutely refused to obey the Princess's command. "Tell her Highness," he exclaimed, with an oath, "that her distemper is

nothing but the vapours, and that she is in as good a state of health as any woman breathing, if she will but believe it." Deeply offended, the Princess dismissed him from her service, and appointed as his successor "Nurse" Gibbons.

But these anecdotes have carried us too far forward in our chronology. When William III. arrived in England, he was attended by Dr. Bidloo, an eminent Dutch physician; but he speedily placed great confidence in Radcliffe—who had cured both Bentinck (afterwards Earl of Portland) and Zulestein (afterwards Earl of Rochford) of very serious maladies—and sought his advice in his frequent attacks of asthma. In 1689, Radcliffe's skilful treatment afforded the King so much relief that he was enabled to join the army in Ireland, and share in the victory of the Boyne. Radcliffe was not less successful in 1691, when put in charge of the young Duke of Gloucester; and Queen Mary's high opinion of his abilities was incontestably proved by a present of one thousand guineas.

In December, 1694, the Queen was suddenly seized with all the symptoms of serious illness. Sir Thomas Millington, who was physician-in-ordinary to the King, gave it as his opinion that she had an attack of measles. Radcliffe let fall the more alarming words, small-pox. "That disease, over which science has since achieved a succession of glorious and beneficent victories, was then the most terrible of all the ministers of death. The havoc of the plague had been far more rapid; but the plague had visited our shores only once or twice within living memory; and the small-pox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover."

For two or three days there were many alternations of

hope and fear. The physicians contradicted themselves and each other with a reckless vagueness which testified to the uncertainty of medical knowledge in that age. The Queen's ailment was measles; no, it was scarlet fever; no, it was spotted fever; it was erysipelas. Recourse was again had to Radcliffe. He looked at the prescriptions, and before entering the royal chamber, declared, with his usual bluntness, that her Majesty was a dead woman, and that it was impossible to do any good in her case, since the remedies given had been entirely contrary to the nature of her distemper. He added, however, that he would do his best to procure her some relief. For a few hours she seemed to improve, and the sanguine cherished hopes of her ultimate recovery; but the disease, small-pox of the most malignant type, had gained too firm a hold of its victim, and in spite of Radcliffe's efforts, she sank beneath it.

The physician's credit with the King continued to increase; and in the following year William sent him abroad to attend his favourite, Keppel, Earl of Albemarle, who held high command in the army during the Namur campaign. Radcliffe remained only a week in the camp, but success attended his treatment of his patient, from whom he received 400 guineas and a diamond ring, while William presented him with £1200. He was offered a baronetcy, but begged to be allowed to decline it, as he had no son to inherit the honour. In 1697, after his return from Loo, where he had ratified the Treaty of Ryswick, the King found himself much indisposed at his palace at Kensington, and sought Radcliffe's advice. Of the interview between patient and physician a graphic account is given by Pittis:—

“Tho King, when the Doctor was admitted, was reading Sir Roger L'Estrange's new version of *Æsop's Fables*, and told him, that he had once more sent for him to try the effects of his great skill, notwithstanding he had been told by his

body-physicians, who were not sensible of his inward decay, that he might yet live many years, and would very speedily recover. Upon which the Doctor, having put some interrogations to the King, very readily asked leave of his Majesty to turn to a fable in the book before him, which would let the King know how he had been treated, and read it to him in these words:—

“ ‘Pray, sir, how do you find yourself? says the doctor to his patient. Why, truly, says the patient, I have had a most violent sweat. Oh! the best sign in the world, quoth the doctor. And then a little while after, he is at it again, with a pray how do you find your body? Alas! says the other, I have just now such a terrible fit of horror and shaking upon me! Why, this is all as it should be, says the physician, it shows a mighty strength of nature. And then he comes over him the third time, with the same question again: Why, I am all swelled, says t’other, as if I had a dropsy. Best of all, quoth the doctor, and goes his way. Soon after this comes one of the sick man’s friends to him, with the same question: How he felt himself? Why, truly so well, says he, that I am e’en ready to die of I know not how *many good signs and tokens!*’

“ ‘May it please your Majesty,’ says Radcliffe, ‘yours and the sick man’s case is the very same; you are buoyed up with hopes that your malady will soon be driven away, by persons that are not apprised of means to do it, and know not the true cause of your ailment; but I must be plain with you, and tell you that, in all probability, if your Majesty will adhere to my prescriptions, it may be in my power to lengthen out your life for three or four years, but beyond that time nothing in physic can protract it; for the juices of your stomach are all vitiated, your whole mass of blood is corrupted, and your nutriment, for the most part, turns to water. However, if your Majesty will forbear making long visits to the Earl of

Bradford (where the King was wont to drink very hard), I'll try what can be done to make you live easily, tho' I cannot venture to say I can make you live longer than I have told you.' He then left a recipe behind him, which was so happy in its effects, as to enable the King, not only to make a progress in the western parts of his kingdom, but to go abroad, and divert himself at his palace at Loo, in Holland."

Towards the close of 1699, William, on his return from Holland, where he had not very exactly followed his physician's regimen, summoned him again to Kensington. Exhibiting his swollen ankles, which presented a painful contrast to the rest of his emaciated body, William exclaimed, "Doctor, what think you of them?" Bluff and direct was the reply—"I would not have your Majesty's two legs for your three kingdoms."

The uncourtly jest terminated Radcliffe's professional attendance at Court; nor would the King suffer him to be sent for again, though Lord Albemarle exerted all his influence with that object. After William's death, the physician's friends attempted to reinstate him in Queen Anne's favour; but for the time she remained inexorable, affirming that if she consulted him, he would send her word again that her ailment was nothing but vapours. On the various occasions of her illness, however, his advice was generally sought, and for his opinions and prescriptions very liberal fees were paid.

In the anxiety caused by the dangerous illness of her consort, Prince George of Denmark, the Queen forgot her offended dignity, and the bluff physician was admitted to the royal presence. On his arrival in Bath, where the Prince was drinking the waters, the Queen said to him, that no rewards or favours should be wanting, "could he but remove the convulsions she was troubled with, in the cure of those which her dearly-beloved husband bore." "But Radcliffe," says his biographer, "who was unused to flatter, instantly gave the

Queen to understand that nothing but death could release his Royal Highness from the pangs he was afflicted with; that tho' it might be a rule amongst surgeons to apply caustics to such as were burned or scalded, it was very irregular among physicians to drive and expel watery humours from the body by draughts of the same element; and that the prince had been so tampered with, that nothing in the art of physic could keep him alive more than six days." The doctor's prediction was fulfilled.

Pittis, Radcliffe's earliest biographer, has a quaintly-written account of the great physician's mode of dealing both with patients and the friends of patients when decision was necessary. The Duke of Beaufort having been seized with the small-pox, Radcliffe was sent for, and found his Grace's window-shutters "closed up in such a manner by the old lady duchess his grandmother's order, that not a breath of air could come into the room, which almost deprived the Duke of the very means of respiration. This method had been observed by the physicians in her Grace's youthful days; and this she was resolved to abide by as the most proper in this conjuncture, being fearful that her grandson might otherwise catch cold, and, by the means of it, lose a life that was precious to her and the whole nation. She had also taken a resolution to give her attendance upon the Duke in person during his sickness, and was in the most violent consternation and passion imaginable when Dr. Radcliffe, at his first visit, ordered the curtains of the bed to be drawn open and the light to be let in as usual into his bedroom. 'How,' said the Duchess, 'have you a mind to kill my grandson? Is this the tenderness and affection you have always expressed for his person? 'Tis most certain his grandfather and I were used after another manner; nor shall he be treated otherwise than we were, since we recovered, and lived to a great age, without any such dangerous experiments.' 'All this may

be,' replied the doctor, with his wonted plainness and sincerity, 'but I must be free with your Graco, and tell you, that unless you will give me your word that you'll instantly go home to Chelsea, and leave the Duko wholly to my care, I shall not stir ono foot for him ; which if you will do, without intermeddling with your unnecessary advice, my life for his that he never miscarries, but will be at liberty to pay you a visit in a month's time.' When at last, with abundance of difficulty, that great lady was persuaded to acquiesce, and give way to the entreaties of the Duke and other noble relations, and had the satisfaction to see her grandson, in the time limited, at Chelsea, restored to perfect health : insomuch, that she had such an implicit belief of the doctor's skill afterwards, that tho' she was in the 85th year of her age at that very time, she declared it was her opinion she should never die while he lived, it being in his power to give length to her days by his never-failing remedies."

Prince Eugene was on a visit to England this year, and accepted an invitation to dine with Radcliffe, who entertained him, it is said, with a repast in the Old English style. No ragouts or "kickshaws," as our ancestors contemptuously termed the products of the French *cuisine* ; but barons of beef, shoulders of mutton, and legs of pork steamed upon the board, flanked by tankards of strong and amber-tinted ale, seven years old. On taking leave of his host, the well-satisfied Prince said to him :—"Doctor, I have been fed at other tables like a courtier, but received at yours as a soldier ; for this, I thank you heartily, since, I assure you, I am more ambitious of being called by the latter than the former appellation. I shall wonder no longer at the bravery of the English nation, which has such viands and liquors of its own growth as those which you have to-day set before us."

In 1713, Dr. Radcliffe, who had accumulated a considerable fortune, was elected member of Parliament for the town of

Buckingham, and began to contract his practice, recommending his patients to Dr. Mead. He made no figure in the House of Commons, though he is reported to have spoken twice; once in favour of the malt-tax bill, and again, in support of a measure to prevent the growth of schism. In the following year, on the 28th of July, Queen Anne was seized with a mortal sickness. Radcliffe, at the time, was suffering from a severe fit of the gout at Carshalton, in Surrey;* and when summoned to attend his royal mistress,† pleaded this as an excuse, though the real motive of his refusal, said his enemies, was some informality in the summons. The populace were furious at his supposed professional scrupulosity, and he durst not venture into London for fear of being mobbed. A member of Parliament went so far as to move that he should be ordered to attend in his place to receive the censure of the House for not waiting upon her Majesty in her last extremities. The doctor was greatly chagrined by these manifestations of public feeling, and warmly insisted that there was nothing in his conduct to justify or excuse them. In a letter to a friend he defended himself with his usual frankness. It is dated August 7th, 1714 :—

“DEAR SIR,—I could not have thought so old an acquaintance, and so good a friend as Sir John always professed himself, would have made such a motion against me. God knows, my will to do her Majesty any service has ever got the start of my ability, and I have nothing that gives me greater anxiety and trouble than the death of that great and glorious Princess. I must do that justice to the physicians that attended her in her illness, from a sight of the method

* Carshalton House, on the Sutton road, occupies the site of his residence.

† There is a Treasury entry—“Wm. Nightingale, for his travelling charges in a journey to Carshalton to fetch Dr. Radcliffe, 12s. 6d.”

that was taken for her preservation, transmitted me by Dr. Mead, as to declare nothing was omitted for her preservation ; but the people about her (the plagues of Egypt fall on them !) put it out of the power of physic to be of any benefit to her.

“ I know the nature of attending crowned heads in their last moments too well, to be fond of waiting upon them without being sent for by a proper authority. You have heard of pardons being signed for physicians, before a sovereign’s demise. However, as ill as I was, I wou’d have went to the queen in a horse-litter, had either her Majesty, or those in commission next her, commanded me so to do. You may tell Sir John as much, and assure him from me that his zeal for her Majesty will not excuse his ill-usage of a friend who has drunk many a hundred bottles with him, and cannot, even after this breach of a good understanding that ever was preserved between us, but have a very good esteem for him. . .

“ I am, Dear Sir,

“ Yours with the greatest friendship,

“ And observance,

“ JOHN RADCLIFFE.”

But the sands had nearly run out of the hour-glass. His disease, aggravated by the mental anxiety which these untoward circumstances had occasioned, carried him off, on the 1st of November, 1714, when he was in the sixty-fifth year of his age.

By his will he devised a considerable estate to University College for the foundation of two travelling fellowships and other purposes ; large sums to Bartholomew Hospital ; £5000 towards the enlargement of University College, and £40,000 for the building of a library at Oxford, besides £150 per annum for the librarian, and £100 per annum for the purchase of books. The remainder of his property he left in trust to be applied to such charitable objects as from time to

time his trustees might approve. Besides the Radcliffe Library, which so nobly perpetuates its founder's name and memory, the Observatory and Public Infirmary at Oxford were erected from the funds provided by his generosity.

Radcliffe's body lay in state at the house where he died until the 27th of November; it was then removed to Oxford, and interred with considerable ceremony in St. Mary's Church.

A physician so successful and original, and a man so hasty and imperious, as John Radcliffe, could not but raise up about him a swarm of enemies, who, after the fashion of the day, exaggerated his peculiarities, put the worst construction upon his motives and actions, converted his foibles into vices, and denied him with equal effrontery either medical skill or ordinary virtue.

Radcliffe was never married; perhaps because the abruptness of his manners counteracted the good effect of a handsome person and dignified presence. His bachelorhood was hardly his own fault, for he twice essayed to gain a wife. In 1690 he made an offer to a citizen's daughter, who was rich and well-looking. He was accepted; but before the wedding-day arrived, it was discovered that she had been engaged in an intrigue with her father's bookkeeper. The misadventure made him something of a misogynist, and he indulged himself in frequent sarcasms on the follies and failings of the fair sex. In 1709, however, when he was in his sixtieth year, he fell in love with a young lady, fair, rich, and virtuous, and sought to recommend himself to her by dressing in the newest fashion and starting a showy equipage. But a difference of forty years in their ages proved to be a stumbling-block which the young lady could not or would not surmount; and the rejected lover became the laughing-stock of the town. Steele, in *The Tatler*, bantered him with easy satire.

"This day," he says, "passing through Covent Garden, I was stopped in the Piazza by Pacolet, to observe what he

called *The Triumph of Love and Youth*. I turned to the object he pointed at, and there I saw a gay gilt chariot, drawn by fresh prancing horses, the coachman with a new cockade, and the lacqueys with insolence and plenty in their countenances. I asked immediately, 'What young heir or lover owned that glittering equipage?' But my companion interrupted, 'Do you not see there the mourning Esculapius?' 'The mourning?' said I. 'Yes, Isaac,' said Pacolet, 'he is in deep mourning, and is the languishing, hopeless lover of the divine Hebe, the emblem of Youth and Beauty. That excellent and learned sage you behold in that furniture is the strongest instance imaginable that love is the most powerful of all things.

"It happened that the charming Hebe was reduced by a long and violent fever to the most extreme danger of Death; and when all skill failed, they sent for Esculapius. The renowned artist was touched with the deepest compassion to see the faded charms and faint bloom of Hebe; and had a generous concern too, in beholding a struggle, not between Life, but rather between Youth, and Death. All his skill and passion tended to the recovery of Hebe, beautiful even in sickness; but, alas! the unhappy physician knew not that in all his care he was only sharpening darts for his own destruction. In a word, his fortune was the same with that of the statuary who fell in love with an image of his own making; and the unfortunate Esculapius is become the patient of her whom he lately recovered. Long before this, Esculapius was far gone in the unnecessary and superfluous amusements of old age, in the increase of unwieldy stores, and the provision in the midst of an incapacity of enjoyment, of what he had for a supply of more wants than he had calls for in Youth itself. But these low considerations are now no more; and Love has taken place of Avarice, or rather is become an Avarice of another kind, which still urges him to pursue what

he does not want. But behold the metamorphosis: the anxious mean cares of an usurer are turned into the languishments and complaints of a lover. "Behold," says the aged Esculapius, "I submit; I own, great Love, thy empire. Pity, Hebe, the fop you have made. What have I to do with gilding, but on Pills? Yet, O Fate! for thee I sit amidst a crowd of painted deities on my chariot, buttoned in gold, clasped in gold, without having any value for that beloved metal, but as it adorns the person and laces the hat of the dying lover. I ask not to live, O Hebe! Give me but gentle death. Euthanasia, Euthanasia! that is all I implore." When Esculapius had finished his complaint, Pacolet went on in deep morals on the uncertainty of riches, with this remarkable explanation—"O wealth! how impatient art thou! And how little dost thou supply us with real happiness, when the usurer himself cannot forget thee, for the love of what is foreign to his felicity, as thou art!"

It is not uncommon to find men greedy of money, yet capable of giving it away with splendid generosity. We suppose there is no doubt that Radcliffe was stained with the fault of avarice; all his contemporaries accuse him of it, though one's contemporaries are not always one's fairest judges. But he seems to admit the truth of the impeachment in a private letter to his unmarried sister, Millicent Radcliffe, which was found directed to her after his decease. "You will find by my will," he says, "that I have taken better care of you than perhaps you might expect from my former treatment of you; for which, with my dying breath, I most heartily ask pardon. I had, indeed, acted the brother's part much better in making a handsome settlement on you while living, than after my decease; and can plead nothing in excuse but that the love of money, which I have emphatically known to be the root of all evil, was too predominant over me." As he bequeathed her an income of £500 a year for life, and his married sister £1000 a

year for life, he certainly made liberal amends for his previous neglect of them.

To a young barrister, named Nutley, who had wasted his fortune in riotous living, he is known to have given 500 guineas. Under an assumed name he settled on the Society for the Propagation of the Gospel £50 per annum in perpetuity. He gave the Bishop of Norwich privately 500 guineas to distribute among the poor Nonjurors; and to Sprat, Bishop of Rochester, under an assumed name, £300 for the relief of the distressed Scotch Episcopal clergy. To Dr. James Drake, the Tory pamphleteer, who had libelled him unmercifully, he sent 50 guineas anonymously, when the man fell into poverty. Obadiah Walker, the Romanist head of University College, was wholly supported by him from the time of his dismissal from his office until his death. He who could be capable of generosity so unostentatious cannot properly be called a miser, though circumstances may have impressed upon him too keen a desire of acquisition and an extreme sense of the value of money. The truth seems to be, that he was mean in small things, grumbled at the cost of his daily living, and was eager to cut down his tradesmen's bills. This spirit of parsimony exposed him on one occasion to a sharp rebuff. He was contending with a workman who had been employed to mend the stones before the doctor's house in Bloomsbury Square. "Why, you rogue!" he exclaimed, "do you ask to be paid for such a piece of work? Why, you have spoiled my pavement, and then covered it over with earth to hide the bad work."

"Ah, doctor," rejoined the artisan, with a smile of deep meaning, "mine is not the only bad work which the earth hides"—a retort which so delighted Radcliffe that he paid the man without further demur.

Radcliffe was a good Jacobite, but I fear he was a bad Christian, if the anecdote preserved by Bishop Kennett be

true. "I remember," he says, "what Dr. Mede has told to several of his friends, that he fell much into the favour of Dr. Radcliffe a few years before his death, and visited him often at Carshalton, when he observed upon occasion that there was no Bible to be found in the house. Dr. Mede had a mind to supply that defect, without taking any notice of it, and therefore one day carried down with him a very beautiful Bible that he had lately bought, which had lain in a closet of King William's for his Majesty's own use, and left it as a curiosity that he had picked up by the way. When Dr. Mede made the last visit to him he found that Dr. R. had read in it as far as the middle of the Book of Exodus, from whence it might be inferred that he had never before read the Scriptures"—an unfair and unnecessary inference, surely. Though Radcliffe was certainly no eager student of God's Word, it is very unlikely that he had never made acquaintance with it in his early years.

Some of the stories told of Mead and Radcliffe, and of the latter's readiness to swallow the former's flattery, seem to us of the kind which no judicious biographer retails and no discriminating reader accepts. Radcliffe was much too shrewd to be gulled by cajolery so broad and inartistic as that which Mead is said to have employed, and Mead was too much the Christian gentleman ever to have resorted to it. Mead would never have insulted the friend he believed to be "deservedly at the head of his profession, on account of his great medical penetration and experience," by cajolery of the coarsest and most transparent character.



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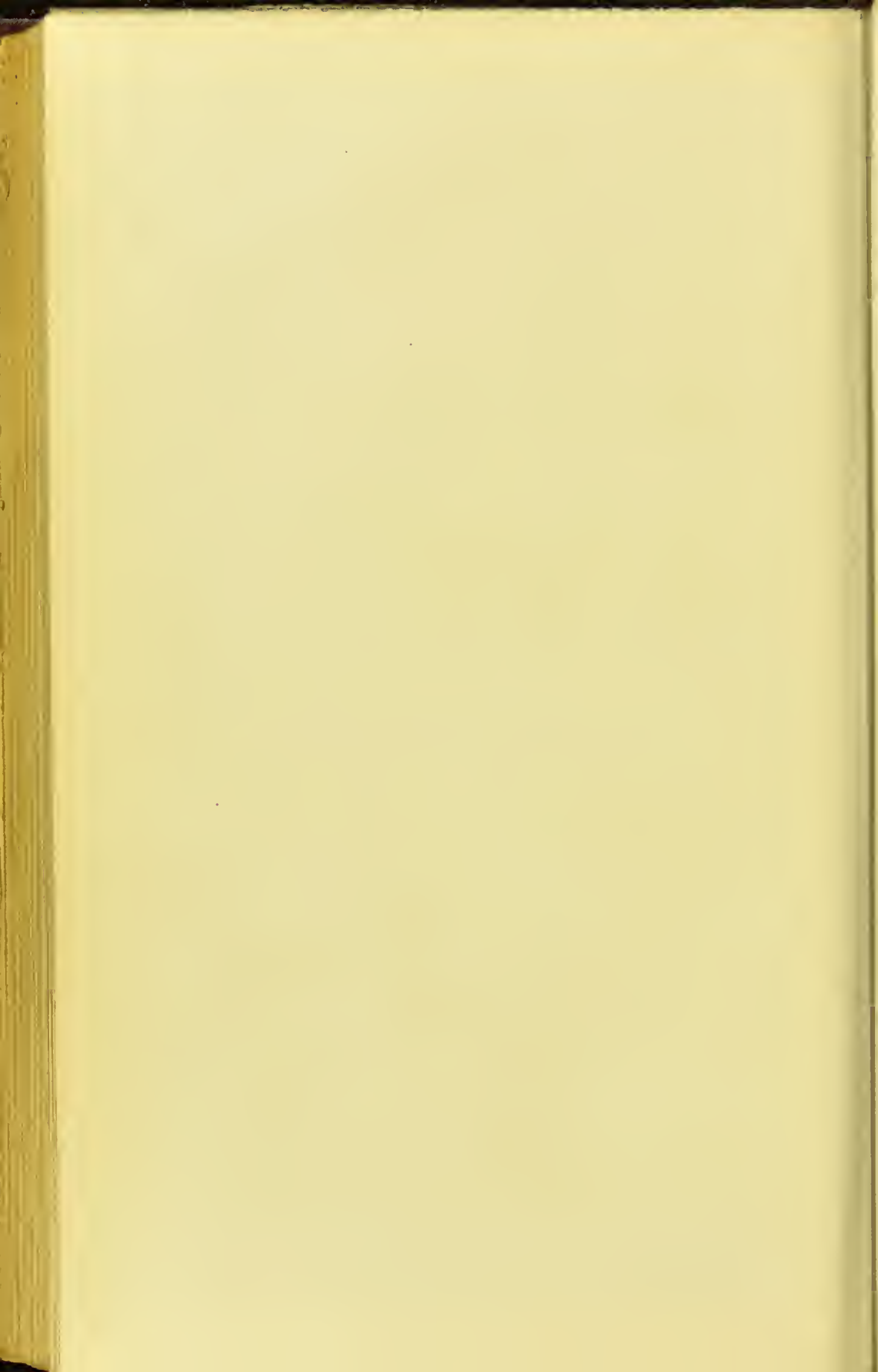
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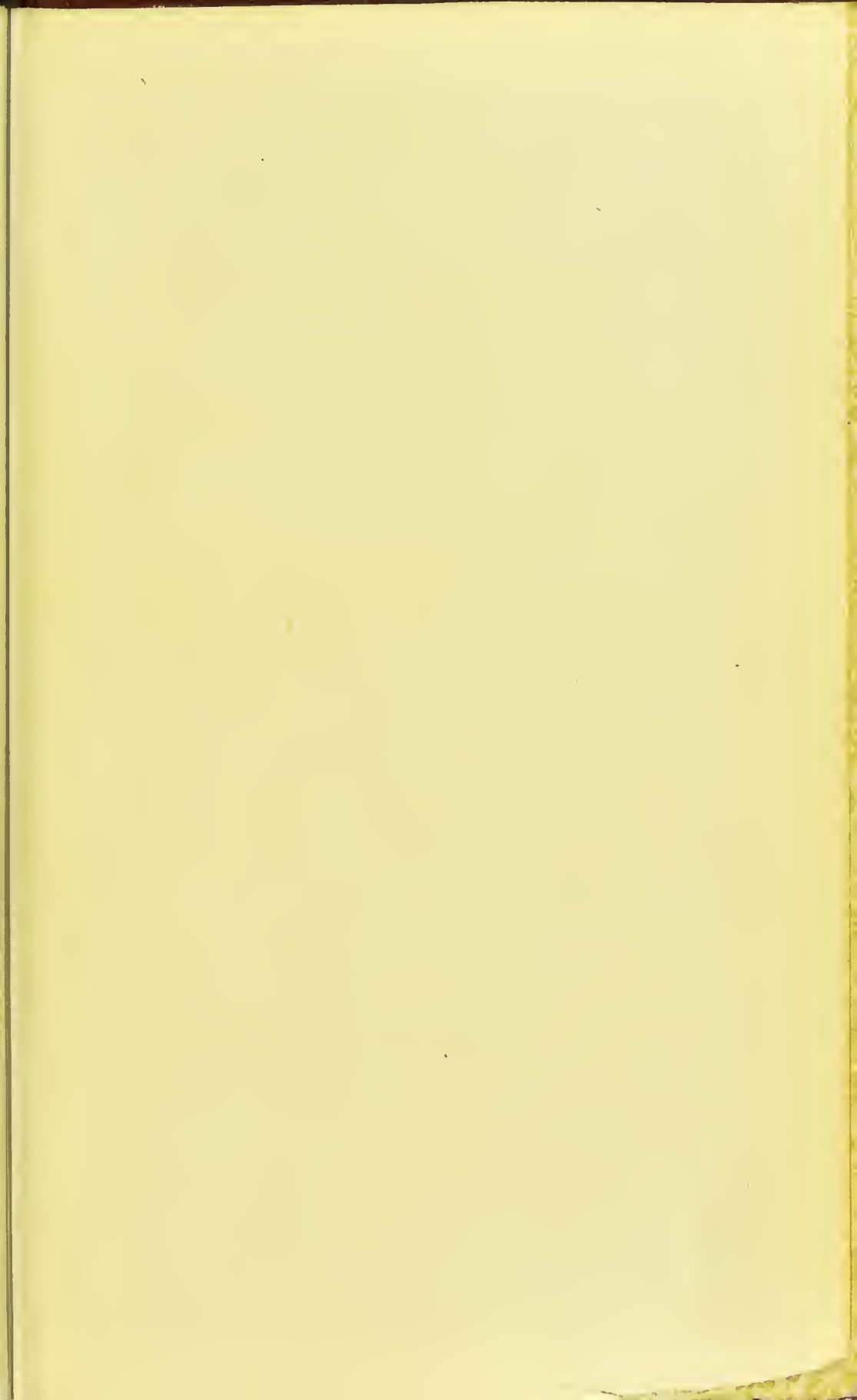
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